AMERICAN FORESTS

MAY 1937

"A BILLION ELMS AT BAY"

1927

1937

TEN YEARS AGO
THIS OCTOBER

It is interesting to turn back the pages of the years and read the record of a business. For time has a way of testing purposes and policies. Good years and lean reveal the character of men and organizations. The fundamental policy of the Bell System is not of recent birth—it has been the corner-stone of the institution for many years. On October 20, 1927, it was reaffirmed in these words by Walter S. Gifford, President, American Telephone and Telegraph Company.

"The business of the American Telephone and Telegraph Company and its Associated Bell Telephone Companies is to furnish telephone service to the nation. This business from its very nature is carried on without competition in the usual sense.

"These facts have a most important bearing on the policy that must be followed by the management if it lives up to its responsibilities.

"The fact that the ownership is so widespread and diffused imposes an unusual obligation on the management to see to it that the savings of these hundreds of thousands of people are secure and remain so.

"The fact that the responsibility for such a large part of the entire telephone service of the country rests solely upon this Company and its Associated Companies also imposes on the management an unusual obligation to the public to see to it that the service shall at all times be adequate, dependable and satisfactory to the user.

"Obviously, the only sound policy that will meet these obligations is to continue to furnish the best possible telephone service at the lowest cost consistent with financial safety. This policy is bound to succeed in the long run and there is no justification for acting otherwise than for the long run.

BELL TELEPHONE SYSTEM

"Earnings must be sufficient to assure the best possible telephone service at all times and to assure the continued financial integrity of the business. Earnings that are less than adequate must result in telephone service that is something less than the best possible.

"Earnings in excess of these requirements must either be spent for the enlargement and improvement of the service furnished or the rates charged for the service must be reduced. This is fundamental in the policy of the management.

"The margin of safety in earnings is only a small percentage of the rate charged for service, but that we may carry out our ideals and aims it is essential that this margin be kept adequate. Cutting it too close can only result in the long run in deterioration of service while the temporary financial benefit to the telephone user would be negligible.

"With your sympathetic understanding we shall continue to go forward, providing a telephone service for the nation more and more free from imperfections, errors or delays, and always at a cost as low as is consistent with financial safety."

Entered as second-class matter at the Post-Office at Washington, D. C., under the Act of March 3, 1879. Acceptable for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Md., December 29, 1931.

EDITOR
Ovid Butler

ASSISTANT EDITORS
Lilian Cromelin
Erle Kauffman

NEXT MONTH

The place of forests in flood control is one of the most discussed subjects in the realm of conservation today. Consequently, the editors are happy to present in the June issue two outstanding contributions to the subject—significant articles by nationally recognized authorities.

They are articles by Charles F. Brooks, director of the Blue Hill Meteorological Observatory, of Harvard University, and Henry I. Baldwin, research forester for the New Hampshire Forestry and Recreation Department; and by C. G. Bates, principal silviculturist, Lake States Forest Experiment Station.

The pictorial feature of the month, "Sanctuary", by Howard Zahniser, will present an intensely interesting tour of the major wildlife sanctuaries of the country.

"Sassafras Voyage", by Darel McConkey—a page from the early history of America; "How I Found the Ranger Trail", by John Riis—adventure in the National Forests; "Charcoal for Camp Cookery", by Frank J. Hallauer—helpful aids to the forest camper—are features you will not want to miss.

Published Monthly by
THE AMERICAN FORESTRY ASSOCIATION
919 Seventeenth Street,
Washington, D. C.

35c A COPY, $4.00 A YEAR

CONTENTS

VOLUME 43 — May, 1937 — NUMBER 5

AMERICAN FORESTS

Page

211 A BILLION ELMS AT BAY
By G. H. Collingwood

216 GHOST TOWNS STILL WALK
By Stewart H. Holbrook

218 TRAILING BIRDS OF PREY
By Alfred M. Bailey and Robert J. Niedrach

221 EDITORIAL
The Elm's Rendezvous with Death
The Old Order Changes

223 THE FLOWERING TREE
By Henry Clepper

229 HOW DOES WATER REACH THE TOPS OF TREES?
By H. D. Tiemann

232 "FOREST INDUSTRY WILL DO ITS PART"

234 TREES THAT CONQUERED THE PRAIRIE
By M. B. Jenkins

237 ANNUAL MEETING TO BE HELD IN THE OHIO VALLEY

238 THE LIFE OF YOUR HOUSE
By George M. Hunt

240 POLLARDS ARE PICTURESQUE
By Frank A. Waugh

244 AROUND THE STATES

250 READERS' FORUM

252 FOREST TRAVELOGUE

253 PARKS AND THE FORESTER
By Herbert Evison

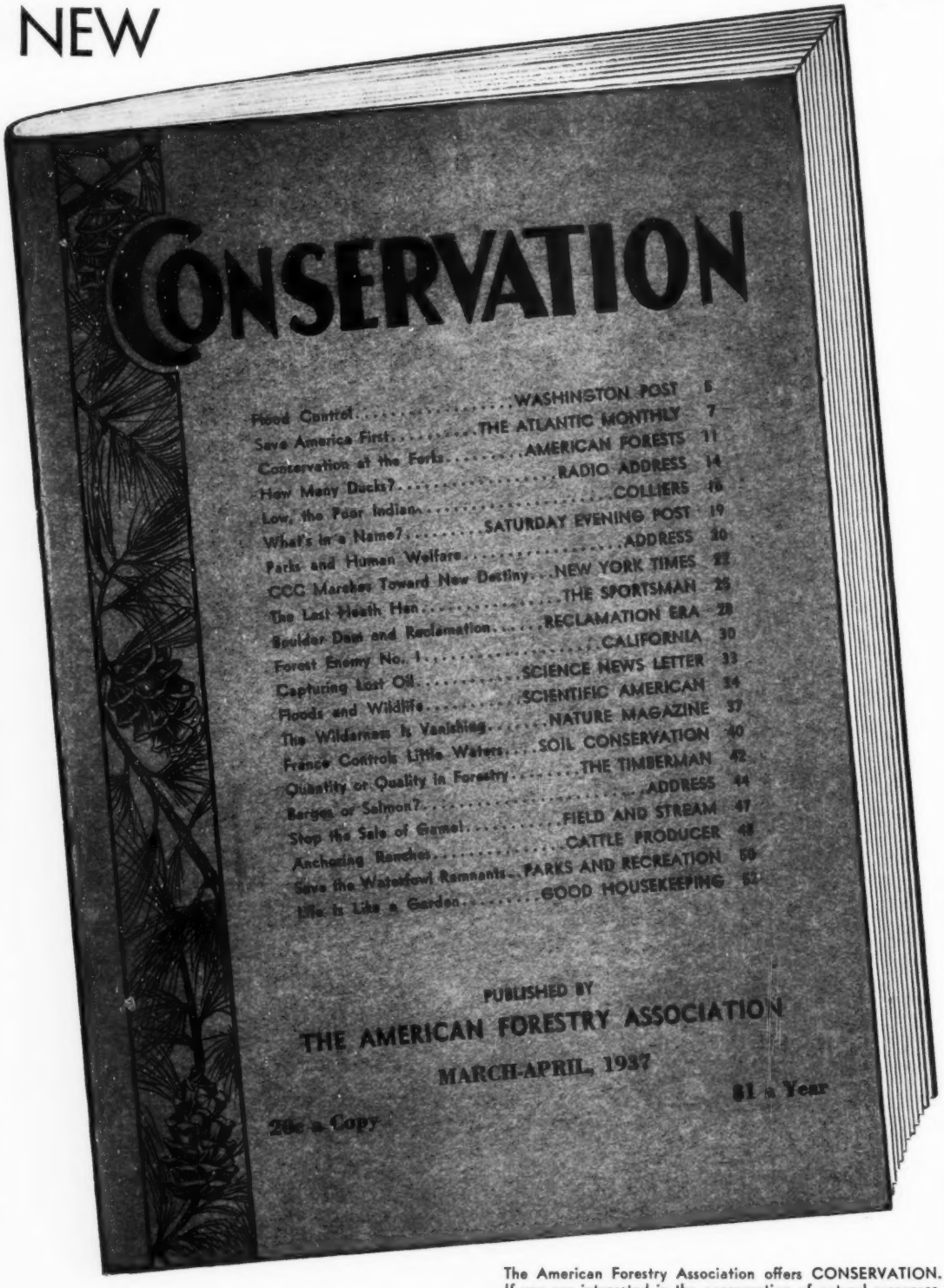
254 FORESTRY IN CONGRESS

256 THE CONSERVATION CALENDAR

260 WITH THE ASSOCIATION'S TRAIL RIDERS

268 "WHO'S WHO" AMONG THE AUTHORS

NEW



A CONSERVATION DIGEST

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THE ELM EMERGENCY

■ One of the most important and immediate conservation tasks before the American people is to assure effective control and eradication of the Dutch elm disease which has appeared in several sections of the country. Experience with the disease in Europe gives evidence that once it is permitted to gain great headway there is no stopping it, and that in the course of a few years it will kill the elms throughout the country.

The extent of such a catastrophe may be gleaned from a reading of "A Billion Elms at Bay"—the lead article in this number of AMERICAN FORESTS. From a spiritual, esthetic and historical standpoint, the American elm is unquestionably the nation's greatest tree heritage. Its close and long association with all classes, rich and poor, young and old, has given it a place in the hearts of our people that no other tree can ever fill. Indigenous mainly to the eastern United States, it spread westward with the pioneers until today it is in point of range and numbers the most national shade tree in the entire country.

From the moment outbreaks of the disease appeared, The American Forestry Association took leadership in arousing the nation to the full import of the hazard and the need of dealing with it promptly and adequately. The Association holds that the disease is both a local and national problem in that local infections if not quickly removed jeopardize the elms throughout the entire country. Both the state and federal governments therefore have a joint responsibility in meeting the emergency and citizens must demand that this responsibility be discharged. The expenditure of a few million dollars now, when it is possible to control and eradicate the disease, the Association maintains, is wise public policy in that it will save a national asset dear to all the people and valued at almost a billion dollars.

Note—In this space is presented each month the Association's policy with respect to timely phases of conservation.

THE EDITOR'S LOG

AN OPEN LETTER

DEAR READER:

If over your radio should come tonight the words — "THE AMERICAN ELM SPEAKING" — would it not arrest your attention?

Unfortunately, the elms cannot speak so their friends must speak for them. The reason is that in every town and city, field and forest throughout the country, our American elms are in grave danger. They need help — your help and mine — because they are threatened by a disease that may wipe them from our landscape as completely as the blight exterminated our American chestnut.

The Dutch elm disease is a new enemy in our country. It has slipped in from Europe where it is rapidly blotting out the elms in Holland, England, France and Belgium.

The disease is particularly fatal to our American elms. If the invasion is allowed to get beyond control, the tree most dear to the American people is doomed — not only in your yard, on your street, in your city, but throughout its range which extends from the Atlantic to the Pacific. Our only hope lies in controlling the disease in its present incipient stage and eradicating it completely.

A valiant fight is being made to that end. On the front line of battle is The American Forestry Association, composed of public spirited men and women throughout the country, interested in preserving America's heritage of trees and forests.

With all its strength, the Association is seeking to arouse the public to the danger of the Dutch elm disease. It is marshaling public support for adequate measures of eradication. It is demanding that state and federal governments strengthen and maintain their efforts to stop the disease before it gets out of hand. At the present time it has in preparation for widespread distribution a pamphlet to inform citizens of the disease and of measures to be taken.

The outlook is that the disease can be eradicated from the United States if the agencies engaged in the work are given the facilities and the public support to carry on. It may take three or even five years to do it but IT MUST BE DONE. The American people with eternal vigilance must see that IT IS DONE.

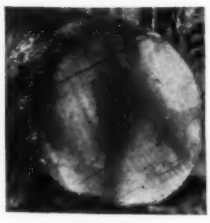
If the federal and state governments falter as they already have done in providing men and money to put down the disease when and where it flares up, the battle will be lost. Since inception of the disease, The American Forestry Association has made "Save the Elm" its watchword and its battle-cry. It asks that you do the same.

Individually and collectively, demand that your representatives in Congress and in State Legislatures provide adequate funds and facilities to cope with the disease. Watch your own elms carefully; keep them thrifty; report promptly to your state department of agriculture any evidence of infection. Support local, state and national organizations that are fighting to save America's most cherished tree.

A billion elms are at bay. A great national heritage is at stake.

It has been said that of all the trees worth fighting for, the elm comes first. Let us make it first.

Sincerely yours,



Editor.

Photograph by W. D. Chandler

A roadside elm in Vermont, in terms of beauty, pleads its own case

A BILLION ELMS AT BAY

Confronted by the Dutch elm disease, they face this unhappy end

BY G. H. COLLINGWOOD

AMERICA has called the roll of the elms. A billion trees have answered, "Here."

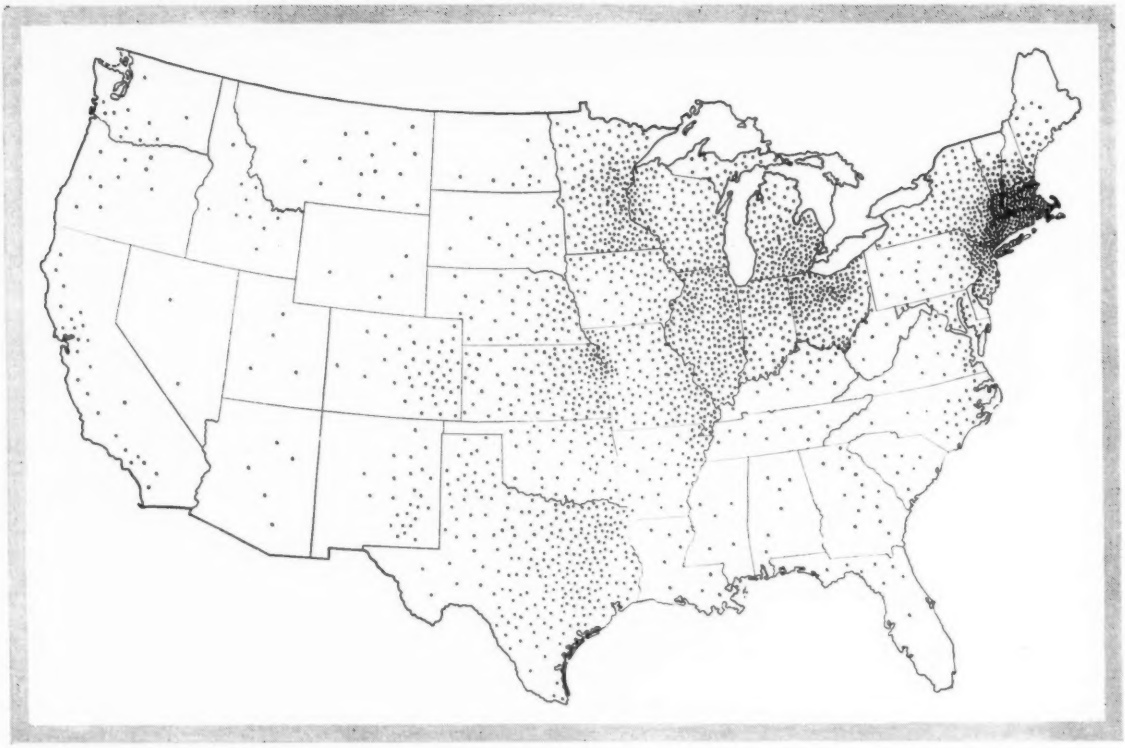
From ancient dooryards in New England, westward to the Pacific, southward to the Gulf and the Rio Grande, in villages, towns and cities, along highways and country lanes, from fields and forests, plains and uplands, the American elm has answered, "We are here—a billion strong."

The roll of America's elms was taken by the Federal Bureau of Entomology and Plant Quarantine in a national survey concluded last month. It reveals an elm heritage the extent and magnitude of which no one heretofore has so much as guessed. In point of range, numbers and companionability, the census shows the elm most entitled to the honor of being America's national tree. It is rooted in the soil of every state. Its numbers vary from 18,000 in Nevada to 135,000,000 in Arkansas.

Now confronted by the Dutch elm disease, these billion elms stand today literally at bay. Their future depends on the will of the American people to rescue them from the disease in its incipient stages. The rescue is possible and the census reveals the cost is insignificant compared to the value of our elm heritage. The sounded threat of the Dutch elm disease is no cry of wolf. Experience in other countries shows that once permitted to get out of control the disease will sweep the elm from our land.

How widely and heavily such a catastrophe will affect the country stares out of every page of the elm census. From New England and the East the elm traveled westward with the pioneers. Its planting as a shade tree has extended beyond the prairies, beyond the Rockies, to cities and villages along the Pacific Coast. A far-flung investment in loving care and protection has become a national tree heritage shared in by every state and by homes and people from coast to coast.

Least in numbers but greatest in value are the 125,000,000 elm trees that shade the streets, yards and houses of American villages and cities. They are valued at $662,000,000. In addition, there are the millions upon millions of elm trees growing wild in meadows, along country roads and in forests, whose added worth raises the monetary valu-



America's elms shade the nation. The map shows distribution of shade tree elms only. Each dot represents 10,000 trees

ation of the country's elms to three-quarters of a billion dollars.

As one would expect, the heavy concentration of elm shade trees is in New England where 3,382,000 were reported, and in the Middle Atlantic States with 2,810,000; but scattered through the much greater area of the six states bordering the Great Lakes are over 9,500,000 elm shade trees. Here in the heart of the country is the center of elm values. Elms make up a third of all the shade trees of that region. Michigan, Wisconsin and Missouri each have shade trees with standing elm timber and cordwood worth more than $5,000,000. The Mississippi Valley from Wisconsin to Louisiana makes heavy contribution to a lumber industry that consumes from 30,000,000 to 200,000,000 board feet of elm lumber each year.

Fully one-half of the shade trees of New England are elms. At an estimated average of $48 for each tree the total value of elms in the six states is $155,554,121. The six Lake States prize their shade tree elms at only $26 apiece, but their total amounts to more than $245,000,000. The five neighboring Central States have under 2,000,000 trees which, at $20 a tree, are worth $38,000,000, while the five Midwestern States value their 2,658,000 elm shade trees at $18 each, or over $47,000,000. There are fewest elms in the three Pacific Coast States, but at an average of $33 a tree the 453,000 planted along streets and in public grounds are worth nearly $15,000,000. In the five Southwestern States, including Texas, many of the elm shade trees are newly planted, so the average value is about $16. But when this is applied to 3,126,000 trees there is the surprising total value of $48,676,538. Next to this group are six Southeastern States with 598,000 elms valued at $11,063,915, and to the north are six Rocky Mountain States with 766,000 elms worth $17,421,785.

Minneapolis and the surrounding metropolitan area boasts 600,000 elm shade trees; Detroit and Cincinnati have 400,000; Dallas, 300,000; Memphis, 250,000; Toledo, 240,000; Chicago, 200,000; Oklahoma City, 150,000; Flint, 135,000; Indianapolis, 120,000; Denver, 105,000; and Milwaukee, 50,000. Several midwestern cities have reported more elm shade trees than from all the elm shaded cities and villages of Vermont, New Hampshire, or Rhode Island.

No one questions the necessity for protecting the elms of New Haven or Boston, or of the roadsides of New England, but until this report was assembled few people realized that Sacramento, California, has as many elms as New Haven, or that Dallas, Texas, has six times as many as Boston. Dubuque, Iowa, has more than Springfield, Massachusetts; Portland, Oregon, with 11,000, bows only slightly to Portland, Maine, with 12,500; and Washington, D. C., has but few more elms than St. Louis or Coffeeville, Kansas.

The Dutch elm disease was introduced in America between 1926 and 1933 on burl elm logs imported from Europe. The first infected tree was discovered in Ohio. Spurred by the knowledge of the

disastrous results of the disease in Europe, a systematic search was made throughout the country and many infected trees were found in northern New Jersey, in New York's Westchester County and western Long Island, and in southern Connecticut.

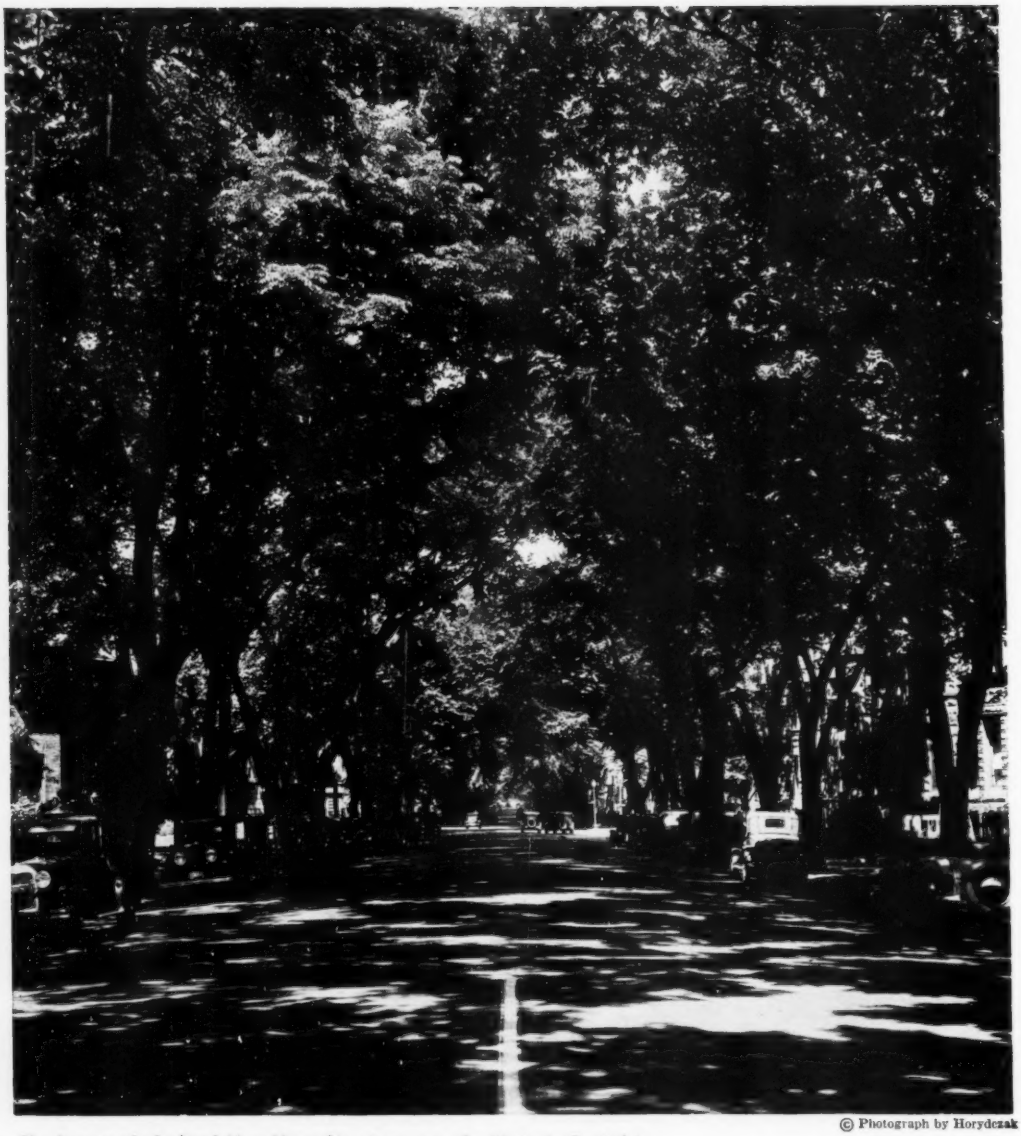
Other infections were discovered in the Middle West, from logs originating from Europe via the seaports of Baltimore and Norfolk, but these have been practically wiped out by federal and state authorities. It was in the tri-state area around New York City that authorities found the disease too deeply entrenched to immediately eradicate. Consequently, to date more than 21,800 infected elms have been cut out of this area and the infected wood burned. This must be immediately done, else the trees will serve as a source of additional infection. Accordingly, not even the wood of diseased trees can be held for fuel.

The cause of the trouble is a fungus whose spores are carried from tree to tree by tiny, slow-winging, bark-boring insects. Neither the disease nor the insects will affect other than elm trees. Because these insects are attracted to decrepit and partially dead elms, rather than to vigorously growing trees, all the less valuable elms which may harbor or prove attractive to the beetles are being cleared from the infected region. On last reports a total of over 2,300,000 such trees had been tagged, and WPA workers employed throughout the year have cut down about 1,700,000 of them. In addition, another 700,000 trees growing in swamps and on mountainsides have been removed or poisoned in furtherance of the plan to reduce the area which will have to be watched and scouted for new appearances of infection. Under this program of sanitation the existing infected area of about 7,500 square miles of elm territory around New York City may be reduced by one-half during the next five years.

This, briefly, is an outline of the campaign now under way. It has proved successful. The plan in the minds of the plant disease generals and their staff is completely to wipe out the pest from every foothold in America. To do this the work must be continued without interruption. If it is interrupted or postponed, the disease will escape from its present limits around New York City and progress steadily north, west and south across the continent. No one knows how fast it can move, but at ten or fifteen miles a year the area would soon be so large as to make the cost of eradication prohibitive. The experience with the disease in Europe shows that sporadic outbreaks at greater distances will inevitably follow any reduction of vigilance. Prompt action by American authorities has resulted in a strangle hold on the disease, but the people of this country may well tremble for fear lack of

Photograph by Katharine Matthies

The disease threatens all elms—large and small. The "Wethersfield Elm" at Wethersfield, Connecticut, is the largest in the United States



© Photograph by Horydczak

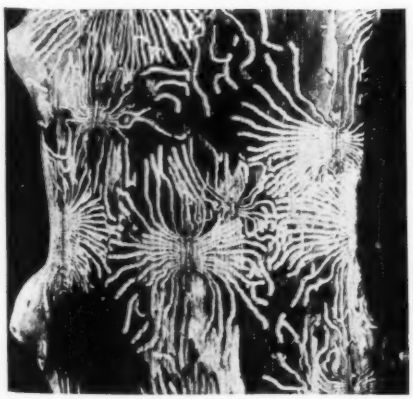
The beauty of elm-lined New Hampshire Avenue in the Nation's Capital is duplicated in hundreds of cities and villages throughout the country

funds may force the present grip on the disease to be relinquished.

Lee Strong, Chief of the Bureau of Entomology and Plant Quarantine, and L. H. Worthley, in charge of the campaign for Dutch elm disease eradication centering in Connecticut, New York and northern New Jersey, report the campaign successful to date. They have publicly declared the disease can be eradicated provided adequate appropriations are available for an uninterrupted attack and assuming that no new introductions of the disease will creep through the present barriers. These men know, for during the past four years they have supervised expenditures totaling over $8,500,000 and have directed armies of men fluctuating, according to the money available and the season, from less than a thousand to more than six thousand. The bulk of these men were selected from those registered on relief rolls, and required training in even the rudiments of the work. Admitting that the requirements of relief labor administration have slowed down the work and made it more expensive, the work accomplished has demonstrated the possibility of successfully eradicating this imported plant disease.

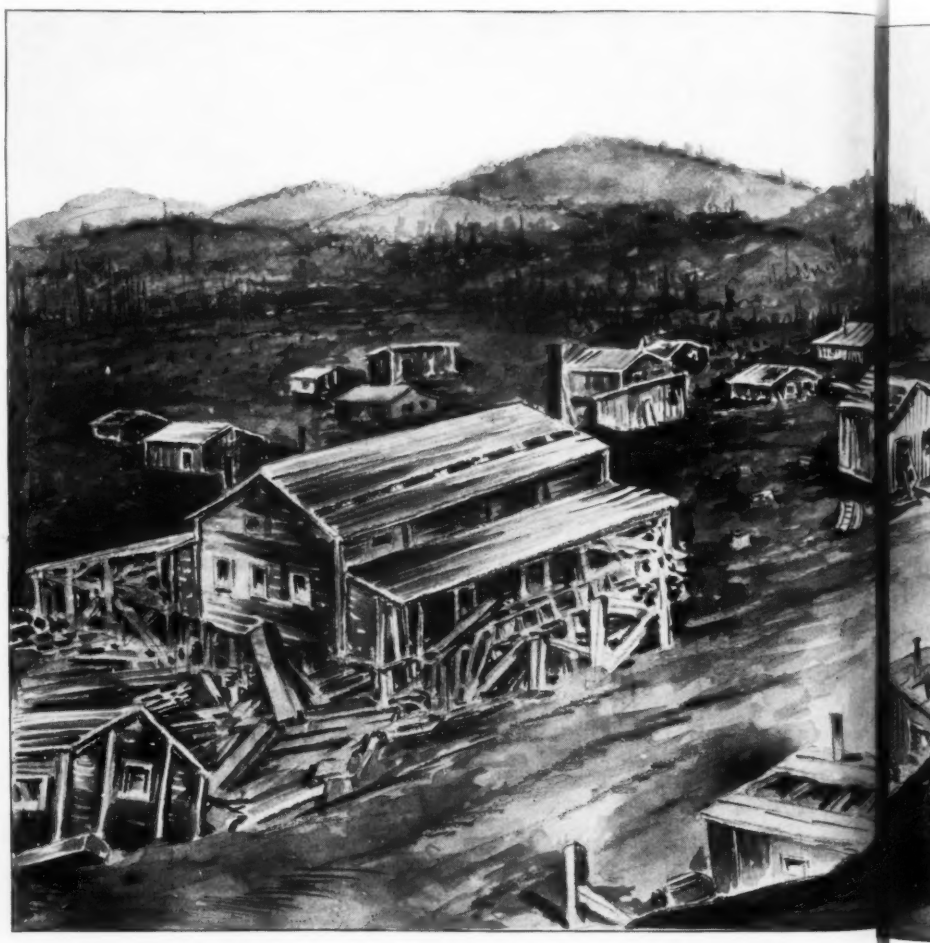
The scattering infections around Cincinnati, Columbus, Indianapolis, Baltimore and Norfolk have been fully controlled, and the 7,500 square miles of disease infected territory around New York City is being reduced by the elimination of undesirable elms. Clear cutting and tree poisoning have progressed to the point of making considerable areas in northern New Jersey completely free of all elms, and the (*Continuing on page* 264)

America's magnificent heritage of elms is threatened by the attack of tiny, slow-winging, bark-boring insects, which carry the disease from tree to tree, shown below — greatly magnified. The lower inset shows the intricate and fantastic channels mined by these borers



GHOST TOWNS STILL WALK

MOST notable among the newer ghost sawmill towns in the Pacific Northwest is that of Port Ludlow, Washington, at the northern tip of Hood's Canal, on Puget Sound, where lumber was made for eighty-three years. But there are others—towns that rose to the stature and dignity of having banks and churches and even newspapers, which are now ghostly indeed. Some of them are marked by the ribs of decaying hulks that were once great sawmills, while others present to the archeologist only a few crumbling brick, where a boiler stood.



For ghost sawmill towns still walk, and the past decade has witnessed a number of subjects for obituaries in Oregon and Washington.

Because of its venerable age, as sawmill age goes, old Port Ludlow came to be looked upon as the daddy of all West Coast towns whose sole industry was that of making boards. They had been cutting lumber at Port Ludlow since 1853, and the end didn't come until 1936.

For most of its long life Port Ludlow was the scene of operations of the lumber and shipping firm of Pope and Talbot, of San Francisco, out of East Machias, Maine; and the northwestern genius of that firm was Cyrus Walker, one-time State-of-Mainer from Skowhegan.

Mr. Walker built at Port Ludlow a mansion which was not only his home but was undoubtedly the finest advertisement a lumber concern ever had. The massive front doors of the mansion did not swing, but slid, in the manner of ship's doors; and the main hall was like a purser's cabin, with finely-wrought companionways leading upstairs. The bedrooms were spacious, while the beds, which were of solid walnut and came around the Horn from Maine, were something to astound the present generation.

The home was staffed by fifteen servants, all Chinese, and the food served was fit for a sultan. In the great cool cellars was everything to drink from Medford rum for the sea captians, to marque champagne for the wives of lumber buyers and Pope and Talbot's salesmen, all of whom made Port Ludlow a port of call.

The dinner parties given at Port Ludlow came to be famous up and down the West Coast, and gold-braided seamen carried their fame around the world. And they were colorful affairs. With ships from half a dozen nations tied up in the harbor, officers would put on their gaudiest uniforms to mingle with the sober frock-coats of landlubbers and the mauve and lavender gowns of bustled ladies.

They sat on the broad veranda of Walker's mansion, in the shade of elms that had come around Cape Horn from Maine as young shoots, and looked out over the beautiful bay, and the women talked of "Trilby," while the men growled about the steam-propelled vessels which sought

By STEWART H. HOLBROOK

to drive the winged ships from the sea.

Cyrus Walker liked a bit of ceremony. On the great lawn he had placed a bronze cannon, a relic of 1812, and on every Fourth of July for close to half a century it was ordered that the ordnance be loaded and fired at sunrise. The cannon presented no salute to ships except when the handsome *Forest Queen* entered and left the harbor. She was Mr. Walker's favorite barque, and in 1877 she made eleven round trips with lumber between Port Ludlow and San Francisco, a record for sailing ships.

Mr. Walker died in 1912. In 1916 the great house was converted into a company hotel, a tradition carried on until last year by the Charles R. McCormick Lumber Company, which took over the Pope and Talbot property.

But the huge sawmill, which cut 400,000 feet of lumber a shift, has been silent for many months; and in the late fall of 1936 dismantling was begun. The magnificent furniture has been moved out of the old mansion and the house itself is boarded up. The bell on Port Ludlow's school doesn't ring any more. Round about there is a considerable village of small houses, homes of mill workers who have now gone elsewhere. Ships pass by without so much as a toot. Old Ludlow has joined the long list of ghost towns.

Nor do ships any longer have need to call at Cosmopolis, Washington, not so old a town as Port Ludlow but one whose notoriety was known up and down the Coast and as far east, at least, as Indiana. For half a century Cosmopolis was the scene of operations of the justly-famed Grays Harbor Commercial Company, whose sawmill was known to workers as the "Western Penitentiary." This institution deserves far more space than can be given it here. Its policy, apparently, was to pay the smallest wages possible to all but its highest skilled help, and to run the mill ten hours a shift, come hell or high water, in a region where eight hours was the accepted standard.

Cosmopolis was well named. In its crew, at all times could be found native white Americans, Negroes, Chinese, Japanese, a few Siwash Indians, and representatives of every European country. It was never affected by strikes, even at the height of the Wobbly Horrors, as the I. W. W. troubles were known. And when cheap help was scarce, the company took to advertising in the help-wanted columns of Eastern country newspapers: "MEN WANTED (ran the ads) to come West and learn the lumber industry in the Greatest Lumber Manufacturing Plant in the world. Experience unnecessary. Good chance for advancement. Fare paid to industrious men."

For some reason this slightly optimistic announcement was well received in the back counties of Indiana; and presently there came to Cosmopolis a horde of Hoosier (*Continuing on page* 242)

TRAILING BIRDS OF PREY

By
ALFRED M. BAILEY
and
ROBERT J. NIEDRACH

Photographs by the author

CLOUD-FILLED Colorado skies, towering cottonwoods, and weathered buttes always remind us of days afield endeavoring to become acquainted with the ferruginous rough-legged hawk, for they are birds of the open spaces. They are equally at home in nests high out on fragile limbs, on precipitous ledges of prairie buttes or upon worn arroyo walls; and when their nesting season is at its height, the skies are beautiful to behold. The marvelous massed effects are at once a joy and a source of irritation to the photographer, who is hoping against hope for a few moments of constant light. We have known the rough-legs for many years but scarcely can claim speaking acquaintance with them, for these wonderful fellows

We visited the nest, then built our blind. Below, at left, young rough-legs twenty-five days after birth. Right, thirty-six days old.

do not take kindly to inquisitive photographers.

We have found, to our regret, that Mr. and Mrs. Rough-leg are willing to start housekeeping elsewhere if their nest is examined while the eggs are still fresh. They seem very tame when perched upon telephone poles, or when circling overhead, querulously protesting the invasion of their prairie domain, but when the would-be photographer attempts to take liberties, they move to other quarters.

Our first attempt at graphlexing a nesting rough-leg was successful enough, for a pair of these white-breasted fellows had built a bulky nest on a scraggly cottonwood scrub about thirty feet from the ground. We had not reached the age of foolishness, as yet, when we were willing to sit cross-legged for hours at a time upon a knotted limb in the hope that a bird would return to its nest while the camera was trained upon it. Consequently, we were satisfied to approach the nesting tree slowly, one of us with face buried in the camera, ready to trip the shutter when the bird sprang into the air.

At last the adult hawk spread her wings

The rounded head of the hawk raised higher and higher above the nesting rim, and then she swooped upward. As the wonderful creature turned to cant away there was a shrill cry from a kingbird as it dived upon the back of the departing hawk and hastened the great bird of prey in its undignified retreat. And the developed negative showed the rough-leg on its way with the kingbird doing its utmost to help her along.

We soon found that it was not an easy matter to secure nesting pictures of *Buteo regalis*. We have known nesting pairs scattered over the prairie for many years--certain cottonwood groves tucked along dry water courses always shelter white-breasted hawks—one pair building along a bit of water-worn arroyo, where they are at the mercy of every passing coyote, and other pairs nesting along precipitous cliffs where they are almost sure to be safe from harm. And so, in looking over our field, it seemed that it would be a simple matter to secure all the photographic notes we desired for the film library of the Colorado Museum of Natural History.

But year after year rolled along and still we had no pictures of adults upon their nests. It is true that we had youngsters of all sizes from fuzzy little fellows to precocious ones of high school age—as large as their parents and twice as intelligent. One year we put our blind along the arroyo. It was a fine blind, if we do say so, a pit excavated in the bank, well camouflaged with painted plaster fronts which resembled the mud walls. One of the hawks accepted the blind as a matter of course and was incubating her eggs when we returned a few days later. We were jubilant for we had an ideal setup with the camera looking into the nest at the correct distance. One of us crawled into the narrow space, wtih camera trained upon the four beautifully blotched eggs, while the other whistled nonchalantly away, making as much noise as possible, so the fears of our friends circling overhead would be allayed. It would be a simple matter to secure pictures—or so we thought.

As it turned out, the would-be photographer sat in the blind for eight hours. The hawks sat on a crest of the hill one hundred yards away, crying occasionally, and once in a while cruising low over the nest. They did not seem anxious or greatly perturbed. It was a warm day, the eggs were not chilled, in spite of the time they were neglected. But did we get pictures? No! Our experience in the cottonwoods was the same. The majority of nesting sites there are not suitable for photographic work. They are high from the ground and in most places impractical for a blind. We tried various locations but the story was always the same, no pictures. We began to wonder if the old birds could count, if two people arriving looked the same as one going away.

In Weld County one year, where a wonderful escarpment cuts down from Wyoming, we found many birds of prey nesting and started operations on golden eagles and prairie falcons. Not far from our subjects was a nest of the rough-legs, clinging precariously to a sun-baked wall. As a matter of course we stuck up a blind and after leaving it overnight tried for pictures.

It was one of those days for which Colorado is famous, clear with cloud masses moving rapidly overhead, cool in the shade and intensely hot in the sun. The two downy young crawled near the rim

of the nest, where they were well sheltered, and did not seem to mind the hours we were keeping the old folks away. Our motion camera was trained on the nest and all was set for good pictures but, sad to relate, the photographer went to sleep. Eventually he awakened with a start, peeked out the blind, and there stood the beautiful parent, with two well-fed youngsters posing comfortably in her shadow.

The camera was started just as the young ones waddled from sight along the edge of the nest. The old one stared inquisitively for a few moments as the whirring film made the first record of an adult ferruginous rough-leg upon its nest, and then slowly spread her wings and drifted away. It was an unsatisfactory picture, but at least we had one of an adult.

The past spring we decided to try a pair which for years had nested in an old tree just south of Denver. We were again working for eagle pictures and had been watching the hawks almost from the time they deposited their eggs. But our past experience did not warrant much enthusiasm; we were having our troubles with eagles, and a pair of rough-legs seemed one more aggravation. The nest was a low one, in a stunted locust about fifteen feet from the ground, and nearby another tree was well situated for a blind. We visited the nesting site occasionally, talked indefinitely about photographing the birds sometime in the future, but it was not until one of the two eggs hatched in May that we finally put our blind in place.

More than three weeks passed before we returned to the nesting site. As we approached across the rolling yucca-covered slope, a coyote sneaked from a draw and literally flowed from sight down the shallow arroyo. We were met by both adult hawks and escorted to our blind, their plaintive cries somewhat resembling the calls of the long-billed curlew. We knew from past experience that it was no privilege to attempt to photograph rough-legs so a tossed dime decided who should have the doubtful pleasure. The sun was well over the eastern prairie rim when the unlucky one straddled the locust limb.

The young showed that they were hungry, and there was no food in the nest, so the chances seemed fairly favorable. The fuzzy fellows were now twenty-five days old; they sat up and yawned and occasionally cried plaintively, scanning the sky with uplifted beaks. After three and one-half hours of waiting the big female flew in swiftly and silently with a small spermophile in her talons. Scarcely lessening her wing beats as she passed the nest, she dropped the little mammal upon it. The young gazed at her for a moment, and then the larger picked the spermophile from the nest and swallowed it whole.

It was July before we again visited the nest. Both adults greeted us, and the young were of large size, their chestnut-colored chests and white underparts conspicuous in the early morning light. After the photographer had concealed himself they crouched silently for twenty minutes eying the blind. Finally they yawned, stretched, and began fluffing their wings. After an hour of this they eagerly raised their wings, indicating an adult was coming. The motion picture camera was whirring before the old one hit the nest. She brought a spermophile, but made no effort to feed the young. Instead, she gazed at the blind for a few seconds and then sprang into space. The youngsters continued to show interest, flapping their wings impatiently from time to time in their efforts to attract an adult. Shortly afterwards a magpie alighted a few feet from the nest, so the photographer started the camera and panned from the nest to the noisy magpie, and then slowly back to the nest. And there, much to his astonishment, an adult ferruginous was staring at him! The young ones were not demonstrative; they did not seem eager for the spermophile upon the nest and the adult would not feed them. She was aware that all was not well, and soon raised her wings and drifted away.

Arising before daybreak each morning during the nesting season grows monotonous to the most enthusiastic photographer, so we decided to try for pictures later in the day. Possibly the adults would attempt to shelter the young from the Colorado sun. So at nine o'clock a weary and not too enthusiastic camera man climbed into the blind. Almost immediately clouds began to form, filling the sky from horizon to horizon, and there was no need of a ferruginous sheltering her young. However, about eleven, the male alighted on the nest, dumped three spermophile to the waiting young, gave a startled glance at the blind, and sprang into the air.

On leaving the blind we were met by the two querulous parents. A pair of kingbirds nesting nearby decided to express themselves and chase their big neighbors from the vicinity. Diving fiercely at the sailing hawks, one literally seemed to hang onto the back of the big bird with his feet and pick with his beak, (*Continuing on page* 251)

MAY DUSK

Now on the gilded summit of the hills—
slopes, white with flowering of plums and pears,
and richly carpeted as royal stairs
by dark red loam; beyond the bough-wrought grilles
of firs padlocked against the western sky,
a gauze-swathed, slender form is seen to run
into the courtyard of the setting sun,
a shadowy dancer, pale arms lifted high;
the while, screened by the branches' needled fret
her swirling looses, veil by filmy veil,
pink, primrose, orchid, violet,
a streamered aftermath, whose colors trail
across the orchards, till their petaled crests
gleam iridescently as pigeon breasts.

—Ethel Romig Fuller.

EDITORIAL

The Elm's Rendezvous With Death

THIS issue of AMERICAN FORESTS features the American elm and again calls to public attention the serious situation with which the country is confronted in dealing with the Dutch elm disease. How grave the situation is few people realize. The immediate danger lies not in the disease itself but in the apathy of Congress toward the need of providing continuing funds to keep the disease under control and eventually to eradicate it.

Unless the American people speedily wake up to the fact that the elm is the nation's greatest tree asset and that its protection warrants the expenditure of a few million dollars, the American elm will speedily make its rendezvous with death. When that happens millions of people, grief stricken by the loss of dearly beloved trees and burdened by the cost of removing their dead forms from yards, streets and towns everywhere, and of replacing them with inadequate substitutes, will cry out in angry rage. But it will be too late. The time for outcry is now. And it should be directed to members of Congress.

As this is written, the House Subcommittee on Agricultural Appropriations is slashing the Dutch Elm Disease item. Apathy and defeatism pervades not only the Subcommittee but both Houses of Congress. Thus the battle to save America's most cherished tree is in grave danger of being abandoned at the very moment when victory is in sight. What Congress and the public do during the next few weeks to back up the front line forces fighting the disease will determine, in our judgment, the fate of the elm.

The Old Order Changes

CONSERVATIONISTS who for a generation have thought in the traditional groove that the only way to achieve a conservation millennium is by berating and outlawing the lumberman should find food for new thought in the address of Colonel William B. Greeley at the Forest Conference held in Washington last month. With impressive seriousness, Colonel Greeley pleaded for an American forest policy that gives forest industry an opportunity fairly to fulfill its obligations both to itself and to the public.

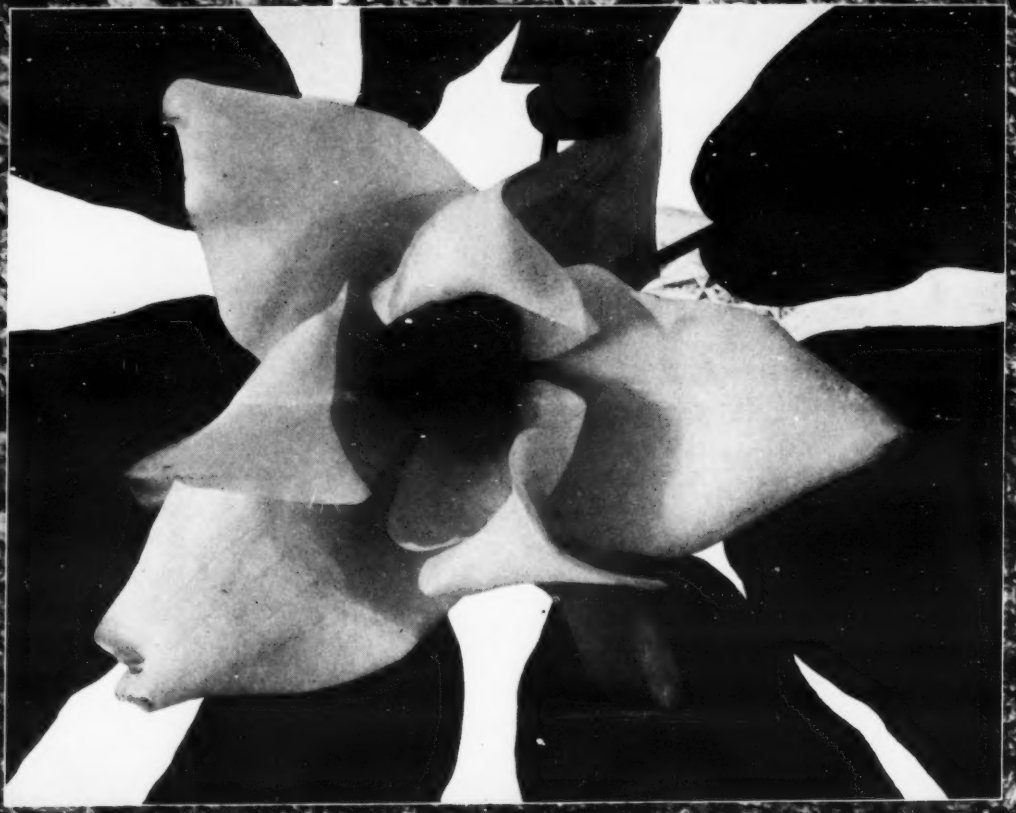
The industry, he declared, is in transition "from the old viewpoint of timber as a mine to the newer viewpoint of timber as a crop. Forest industry seeks to adjust its upbringing in laissez faire economics to the public interest now recognized as inherent in natural resources. It honestly wants to find common ground on which the obligations of responsible men to the investments in their trust can meet legitimate interests of public welfare."

Colonel Greeley spoke for the lumber industry. As industry's spokesman, his national standing and recognized personal integrity commands acceptance of his word that the industry means what it says. So accepted, it forces thoughtful reflection. For more than thirty years government philosophy has been to indict the lumbermen for their destructive methods and their refusal to embrace forestry. The whole course of American conservation is strewn with mistrust, conflict and misunderstanding as between public foresters and private lumbermen. Antagonisms have consistently blocked cooperation and as consistently have deadlocked progress.

The policy of the Department of Agriculture in dealing with the farmer during the past two decades has been distinctly different from that of dealing with the lumberman, although the former has been as great a devastator of the soil as the lumberman of timber. Cooperation has been the keynote of agricultural progress. Lack of cooperation, except in fire prevention, has all but stalemated private forestry.

Nothing is gained by arguing the rights and wrongs underlying these old differences. They are of the past. Colonel Greeley's pronouncement serves public notice that the old order within the lumber industry has changed and that the industry now stands ready to meet the government halfway and to do its part in formulating an American forest policy "that goes all the way through."

Here is an invitation and an opportunity long sought by Uncle Sam's foresters. Can they likewise change their old order of human relations and meet the challenge in a spirit of honest acceptance and fair trial? If not, progress would dictate that they frankly say so and definitely outline another course.



The pussy willow with its silvery buds. Opposite page, the bark and blossom of the magnolia

BY HENRY CLEPPER

THE FLOWERING TREE

NOT WITH fanfare of trumpets but rather in whispers do the heralds of Spring announce her arrival. So quiet, so gradual, is her coming that many trees and shrubs have splashed spots of color on wood and field before Jack Frost has laid on his last coat of whitewash.

One of the very earliest of all plants to bloom, certainly one of the most conspicuous, is the pussy willow with its well known silvery buds. In sunny sheltered nooks along streams the buds of some pussy willows had burst open this year and had put forth their grayish bloom in January. If any shrub deserves the title and honor of spring's harbinger, without question it is the pussy willow.

Among our native trees the earliest to bloom are the red and silver maples whose blossoms appear long before the leaves burst their buds. Their red and yellow flowers, growing in clusters along the twigs, may be fully developed by the middle of March. Not far behind the maples come the trembling and large-toothed aspens, both conspicuous in the spring woods by their dangling flower tassels, which are often so numerous that they give the crowns of the trees the appearance of being covered with a cloak of white.

Another member of the poplar genus prominent in the spring landscape is the Carolina poplar. One must not look for it, however, in the woods, but rather along streets and lanes, and in parks and cemeteries. The Carolina poplar, a tall fast-growing and light-loving tree, owes its wide distribution throughout the country from having been so extensively planted. It is a hybrid of the well known cottonwood.

The cottonwood is perhaps the most widely planted tree of the Middle West and the Great Plains. Pioneers, trekking west to the treeless prairies, planted cottonwoods by the hundreds of thousands for shade and windbreaks. To those early settlers it was the tree of hope and promise. Easy to plant and rapid in growth, it made homesteads out of those first crude huts so desolate and so widely scattered over the windswept plains.

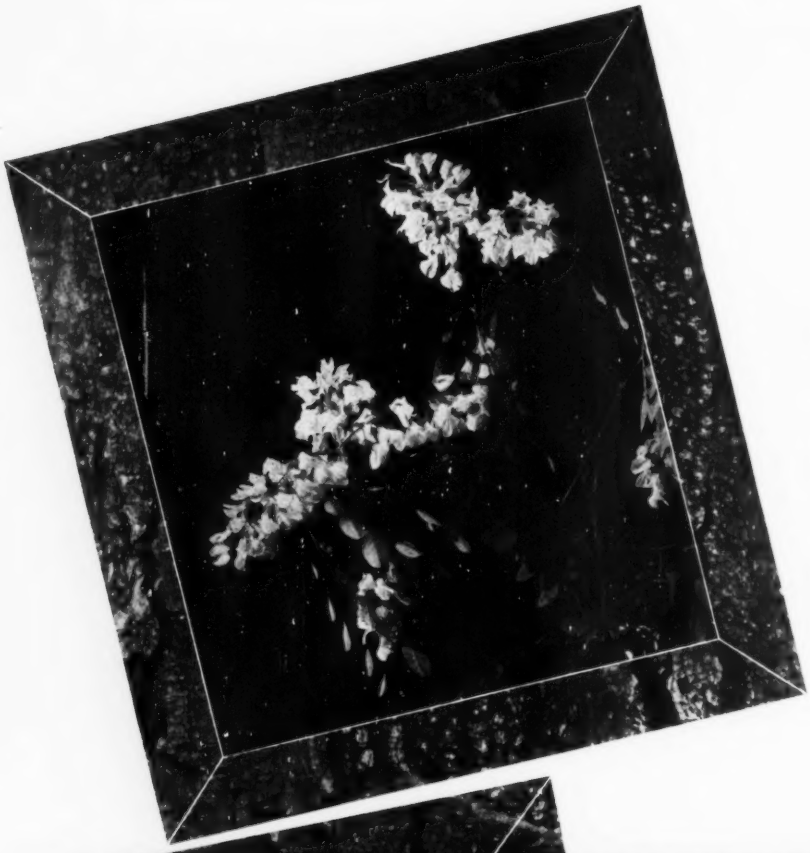
A few other trees put forth their flowers before spring has officially arrived, notably the graceful American elm and its rarer brother, the slippery elm. Early, too, are the bitternut and shellbark hickories. Considered by many naturalists the handsomest of the true hickories, the bitternut, when encountered in the spring woods and fields, is a delight to the eye. Usually it is found growing in moist bottomland soil, sometimes in swamps.

Who, seeing the redbud or Judas tree in full bloom in early spring, has not been thrilled by the sight of that most showy tree? Its flowers, sometimes so densely clustered as to form masses of pink blossoms, are extraordinarily attractive against the drabness of brown hillsides. That the redbud should have a flower shaped like that of the common garden pea is not astonishing; they are members of the same botanical family.

Another member is the black locust. Let me describe for you, if I can, a certain locust that I know. Tall and spreading, it stands on a broad greensward. Its drooping flower clusters develop in such profusion as to envelop entirely its crown. On a humid June night in the moon's

The black oak in spring is the symbol of strength and grace

Upper left, the sweet gum, Queen of the lowlands. Upper right, the American beech, Quaker of the woods. Right, the exquisite basswood, better known as linden



Left, flower of the black locust, in beauty incredibly lovely, in scent unbelievably fragrant

Lower left, the Carolina poplar, graceful and prominent in the early spring landscape

Lower right, the delicate beauty of the showy western dogwood

Upper left, the bitternut hickory, handsomest of the true hickories

Upper right, the red maple, among the first native trees to bloom

Right, dainty flowers of the American elm, most cherished of trees, blooming in early spring

Photographs by George C. Baetzhold, Lloyd R. Koenig, Ernest Crandall, and United States Forest Service.

bright radiance, it is like a dream tree, its outline softened by the moon-glow, its perfume borne by the summer breeze—in beauty incredibly lovely, in scent unbelievably fragrant.

Coleridge, the English poet, called the white birch

"Most beautiful
Of forest trees—the lady of the woods."

As well might those words be said of the yellow or silver birch—most typical of our eastern American birches. Its flowers appear with the leaves. A member of the same family to which the alders belong, like them it is most often found in moist places, particularly along streams.

Not for its flowers, but because of its exquisite foliage is the basswood a tree to be sought in the spring woods. Its clustered white flowers do not appear until June or July, by which time the leaves are full grown. Dark green on their upper surfaces and pale green below, they are roughly heart-shaped. Also known as linden, and sometimes called lime, it is a tree of wide natural distribution, and has been planted extensively for shade and as an ornamental.

The beech is the neatest of forest trees. A botanist friend once called it the Quaker of the woods, a comparison not without reason when one considers its smooth gray bark, its neat and compact foliage, and its general appearance of substantial correctness. One must search for the small and tender flowers of the beech if one would examine them. They appear in April and May, but usually are hidden among the tree's early leaves of palest green.

To see once the distinctive leaves of the sweet gum is to remember them always. Star-shaped and five-pointed, they are pleasantly scented when crushed. The pollen flowers are shaped not unlike the button-balls of the sycamore tree, and appear before the leaves are fully formed. Also known as red gum and liquidambar, the tree, though it grows as far north as southern New England, is more typical of the woods of the South.

The oaks of the late spring woods have a quality of beauty all their own. It is then that their leaves, which with the advance of summer become stiff and dark, are delicate in texture and pale green in shade. Slender pollen blossoms hang in tasseled clusters from the tips of the twigs. Strength and grace are joined to form a picture at once uncommonly attractive and matchlessly proportioned.

Although numerous other trees of our woodlands produce beautiful spring flowers and foliage, the foregoing species are the ones that usually appear first. Varieties of the wild species have been cultivated to retain their early blooming characteristics, and for that reason have been widely planted in parks, cemeteries, and along driveways where their ornamental qualities may be seen and admired.

Not all the early flowering trees grow wild in the woods. Some are found only in cultivation, among them horse chestnut, Norway maple, crabapple, and the Japanese cherries.

Although of little commercial value as regards lumber and other timber products, many species of small woody plants native in our forests have remarkably attractive foliage. And although none blooms so early as the pussy willows, several of these shrubs are among the very first to flower in the spring.

Especially early is the black alder, a water-loving shrub whose blossom tassels droop from the ends of the twigs. Another is the serviceberry or shad bush, easily identified by its clusters of white flowers. Others are the wild plum, spice bush, fire cherry, and dogwood, the latter unquestionably one of the most beautiful of the flowering shrubs though blooming later than those previously mentioned.

Of the dogwood Dr. Joseph S. Illick once wrote that it "bursts forth into early foliage and floral beauty which make it the glory of the under-story of our northern forests." When in flower it is the most readily identified of our woodland shrubs. Its blossoms, which form masses of white bloom against the background of dark woods, are familiar to everyone. Erroneous, however, is the common belief that the four petal-like bracts are part of the flower; as a matter of fact, they are actually modified leaves.

To many people the esthetic appeal of woodland trees in bloom is like no other satisfaction derived from the contemplation of nature and her handiwork. Foremost among those contributing to that satisfaction must be listed the dogwoods of historic Valley Forge in Pennsylvania. And until one has seen the striking display made by the Valley Forge dogwoods, one really has not seen this most lovely of flowering shrubs at its best.

Although not so widely known or visited as the world famous Japanese cherry trees of Washington, the dogwoods of Valley Forge are no less beautiful. Each year they are viewed by ever increasing numbers of residents of states all over the East and Middle West.

It is quite practicable to transplant most of the foregoing flowering trees and shrubs from their wild state to cultivated soil. That they have not always been successfully transplanted, however, is the result, not so much of lack of care, as of failure to duplicate the original habitat.

Many once common flowering shrubs have been almost exterminated by promiscuous gathering, and that is the reason why conservationists disapprove collecting at all. Trees and shrubs are private property, and are protected in most states by laws which provide penalties for their illegal removal. Consequently, the home owner who desires an early blooming pussy willow, alder, cherry, or crabapple on his lawn is advised to consult a nurseryman, who can provide him with numerous attractive varieties.

HOW DOES WATER REACH THE TOPS OF TREES?

BY H. D. TIEMANN

"And God said, Let the waters . . . be gathered together unto one place and let the dry land appear, and God called the dry land Earth and the gathering together of the waters called He Seas. And God said, Let the earth put forth grass, herbs yielding seed, and fruit-trees bearing fruit after their kind, wherein is the seed thereof."

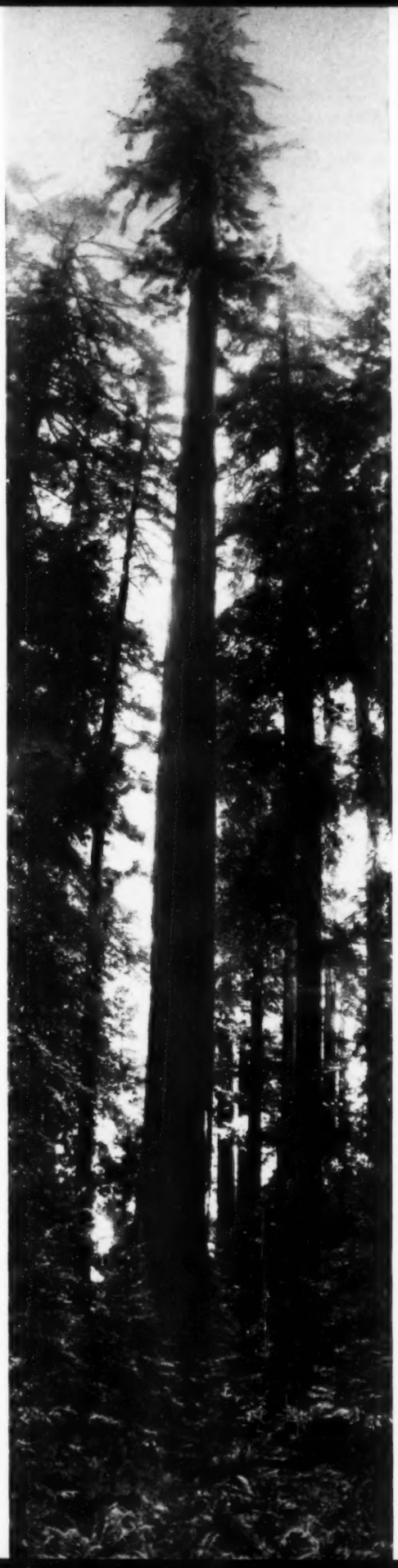
SO overwhelmed has man become by the outcome of the inventions of his brain that he is prone to lose sight of our inexorable dependence upon nature for all of our knowledge and attainments. Science, the child of man's own consciousness, has sometimes been exalted as the source of knowledge when in reality it is nothing more than our own interpretation of the environment in which we find ourselves. This distorted conception becomes more evident in the study of life and its manifestations.

Back of the simple question, which many a child has asked, of how the sap rises in the trees, back of the perennial miracle constantly occurring before our eyes of the unfolding leaves and the supernal transformation of bleak winter into verdant spring, lies a philosophy reaching to the foundation of our lives.

For three hundred years or more biologists have been grappling with this seemingly superficial question of the rise of sap, but the answer is not yet given.

Certainly water will soak up in any hygroscopic material, and at first it may seem a simple matter that the water from the ground should reach the leaves of the trees, but the accomplishment is a far more fundamental one than that and is the culmination of evolutionary processes reaching back untold ages. Nature has devised a means of accomplishing the result in a practical manner and by a method which science has yet to discover or invent.

Following the discovery of blood circulation by Harvey in 1628, plant physiologists began to study the sap flow in plants, and Malpighi was perhaps the first to point it out in 1675 in his Phlanzenanatomie. So much has been written on the subject since then that I suppose a volume as large as the Encyclopedia Brittanica could not contain all that has been printed. Yet we still

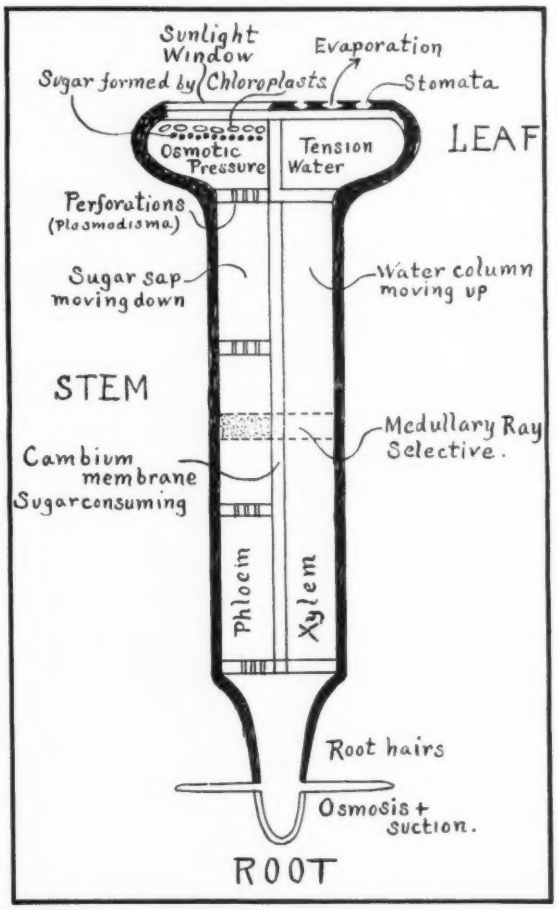


What miracle draws the water to the top of this, the Founder's Tree—tallest tree in the world? (Photograph by the National Park Service)

do not know how nature accomplishes the feat.

There are three quite obvious but stupendous things about life which science has not been able to fathom—perhaps never will. First, how did life originate? Second, how does the living plant manufacture food materials? Chlorophyll in the green leaves, by help of sunlight, breaks up the defunct carbon-dioxide molecule and restores its energy in the form of sugar and oxygen. But how is it accomplished? We do not know. This seems to be the only place in the universe where the "second law of thermodynamics" is being reversed spontaneously. In more simple language,—in the green leaf a building up of complexity of form is occurring instead of the otherwise universal leveling down or dying. Third, how does life perpetuate itself; how is the infinite complexity of form of a plant—or animal—transmitted forever onward? Much has been learned of the details, but as to the ultimate process it is a complete mystery and has never been accomplished artificially.

Recent experiments of Dr. W. M. Stanley of the Rockefeller Institute on virus proteins, show that non-living molecules can reproduce themselves and act as though alive. The error in jumping at the conclusion that the origin of life has at last been discovered must be guarded against, however. Certainly the virus appears to be the border line between the living and the non-living; but the startling revelation of Dr. Stanley's remarkable research is rather, that of the mechanism by which life may act upon non-living matter to produce its results, but not an explanation of what life itself is.



A drawing of a mechanical tree—purely diagrammatic, it may appear fantastic, but it is nevertheless true to form as far as the necessary mechanism is concerned, with all unessential parts omitted for simplicity. Relative sizes of parts are entirely disproportionate. Mechanically the diagram suggests the Carnot cycle of a gas engine, the energy for its operation being supplied by the sun in the form of osmotic pressure. The medullary rays extract sugar from the phloem and exude water into the xylem, this being brought about by the consumption of the sugar by the growing cambium cells. Semi-permeable membranes are indicated by double thin lines; impermeable walls by dense black lines

Some things seem clear enough. Life began in the water. For the building up of complexity of form, food was necessary; this required chlorophyll, carbon-dioxide and sunlight—the only way in which food can be derived from the inorganic world. Under water was not the best place for this combination. When the "dry land appeared" it soon put forth grass, herbs, and fruit trees.

Leaves were the best possible arrangement for the maximum manufacture of food. Could anything more ingenious be conceived than flat sheets of chlorophyll, spread out to receive the fullest benefit of sunshine bathed on all sides with air containing carbon dioxide in the form of gas? But the the living protoplasm in the leaf, without which the marvelous chemical transformation would be impossible, must be continually bathed in liquid; it must still be immersed in its primitive environment out of which it rose—the sea. Just as animal cells must be continually bathed in the blood stream or they perish.

But how can the leaves be spread out in the new realm of the air and sunshine and still be supplied with the life-supporting sea? Some means must be devised by which this can be brought about;—and it is this means which forms the subject of this article. Not the answer, mind you, for that is still unknown. Yet nature has certainly solved the problem in a large way, and having done so, the last miracle is ready for performance—the bearing of fruit.

Before attempting to explain what feeble knowledge we do have of the subject, I would again call the reader's attention to the Biblical

quotation. Notice the sequence of the creations —waters; dry land (seas and earth): grass: herbs yielding seed: fruit trees bearing fruit. And then what? "And God said let the waters swarm with swarms of living creatures—let the earth bring forth living creatures,—beasts, after their kind." Living creatures were possible only as the plants preceded them and manufactured food for them out of inorganic elements. Yet this was written many thousands of years ago!

To raise a column of water to the tops of our tallest trees would require a pressure of 156 pounds per square inch above atmospheric, or over eleven atmospheres. Root pressure produced by osmosis might theoretically rise temporarily to this amount provided a sufficient concentration of sugar could be continuously maintained and that the delicate membranes of the root hairs could stand the strain. But there is no proof of any such pressures in the roots, and for various reasons such a hypothesis appears to be untenable. With 156 pounds pressure per square inch near the root of a big tree it might be dangerous to puncture the bark!

Suppose on the other hand, that we try a vacuum from above. This idea may be dismissed at once since water could be raised only 38 feet by the pressure of one atmosphere. We must account for ten times that amount. How about a capillary tube? To raise water 380 feet would require an unbroken tube having a miniscus at the top of about twelve millionths of an inch in diameter, which is just at the limit of visibility under the most powerful microscope. No cells are as small as this.

Even if there were, puncturing such a tube at any point where its diameter were greater than this would let the column break below the puncture. While interstices in cell walls are smaller than this, no such continuous tubes exist in the wood, and if they did the frictional resistance imposed by such attenuated tubes would vitiate their purpose. For these and other reasons this hypothesis must be discarded.

Do living cells play a part by some unknown vital pumping action? A number of biologists have thought so, particularly an Indian scientist, Sir Jagadis Chunder Bose. A book, printed in England in 1923, "Physiology of the Ascent of Sap," describes many very ingenious and delicately performed experiments, by which he attempts to establish his hypothesis. But others who have tried to duplicate his experiments have failed to establish his results.

Molisch, however, in 1928 and 1929 reports to have successfully duplicated some of Bose's experiments. Bose assumes rhythmical pulsations or waves of stimulation, accompanied by changes in electrical potentials. Perhaps electrical potentials may play a part, but if so how? Bose finds differences in electrical potentials in all living cells, which vanish upon the death of the cell. There has been a great deal of dispute as to whether *living* tissues are necessary for the movement of the sap. Certainly the roots and the leaves must be alive, for the normal movement to occur, but whether or not the intervening cells need be alive remains a question. Sap ascent has been obtained for a time through dead tissue, it is true, notably by Strasburger, but there is no proof that normal movement would take place continuously, and the evidence is quite conclusive that the transport of sugars through the phloem requires living sieve tubes.

Astonishing variations in pressures are recorded by the attachment of a gauge. This one has been on this shagbark hickory and observations have been made for about two years

That water does rise in the sapwood at no insignificant rate there can be no question. Professor Huber of Darmstadt finds the rate to reach twenty-eight feet an hour in the middle of the day, falling to thirty inches at night. Bose measured an apparent speed by recovery of drooped leaves successively along a stem of chrysanthemum to be twenty-six

(*Continuing on page* 265)

"FOREST INDUSTRY WILL DO ITS PART"

Washington Conference Reaffirms Lumberman's Stand on Forest Program

TWO HUNDRED representatives of forest industry and public agencies met in Washington, April 7-9, took stock of accomplishments in forest conservation during the past three years and reaffirmed with broadening resolutions the forest program initiated in 1934 under the conservation section of the Lumber Code. Called by the National Lumber Manufacturers Association, the Conference marked another forward step in bringing private, state and federal representatives together for cooperative action in extending the practice of forestry throughout the United States.

At the opening of the session, Wilson Compton, Secretary-Manager of the National Lumber Manufacturers Association, expressed the purpose and attitude of the Association in the following words: "Between the forest industries and informed public agencies there is no longer important difference of opinion of what, in the interest of forest conservation and permanent forest industry, should be done. As to how it is to be done, under what conditions, and by whom, there is not so clear a mutual understanding. . . . The purpose of this conference may be stated in simple words through a frank exchange of views to find a workable common denominator of public and private action toward nationwide forest conservation.

Walter B. Nettleton, President, and Wilson Compton, Secretary-Manager of the National Lumber Manufacturers Association

"We want conservation and sustained production of forest resources and the perpetuation of the sources of livelihood of our industry; we want to arrive at a constructive solution and so far as practicable we want to arrive at it by the voluntary act of intelligent and well-disposed forest owners in cooperation with an intelligent and well-disposed government; we want to do our part and we want the public to do its part.

"'This is an industry undertaking. It will be so administered.' With these significant ten words the lumber and timber products industries in 1933 and 1934 initiated an industry-wide undertaking toward conservation, the sustained production of forest resources and permanence of forest-industry-dependent communities. That undertaking under difficult circumstances and without the expected support of federal and state actions has in most regions made substantial progress. We are here to review that progress and to build upon it."

Convening at ten o'clock the morning of April 7th, at the United States Chamber of Commerce, the conference after a series of talks by W. B. Nettleton, President of the National Lumber Manufacturers Association, Wilson Compton, F. A. Silcox, Chief Forester of the United States, Henry S. Graves, Dean of the Yale Forest School, H. A. Smith, President of the Association of State Foresters and John Woods, Forester of the National Lumber Manufacturers Association, resolved itself into a series of committees. These committees met during the afternoon and following day to discuss various parts of the 1934 program and to formulate recommended changes justified in the light of recent experience and changing conditions. The amended program, the summary of which is given later, was adopted the final day of the Conference.

In his talk, Mr. Silcox interjected into the proceedings the question of public regulation of industry, stating it as his conviction that some form of regulatory control is necessary if the objectives of the program are to be attained. He declared himself in full agreement with the objectives and with leaving as wide a margin as possible for voluntary action on the part of the industry but said that he could not yet see how the problem of bringing the industry as a whole under enlightened forest practice can be met without some margin of federal or state regulatory control.

"We cannot separate the forest problem of the United States from the general industrial, eco-

nomic and political problems in the United States today", he declared. . . . "If regulation from the public point of view is necessary, I want to see such regulation exercised within the democratic structure. I have no confidence in any bureaucracy; neither have I confidence in self-appointed boards removable at will by the bureaucracy. . . .

"The fact that your own organization functioning as a democratic body can take up problems of this kind and deal with them in joint effort with the public is the fundamental thing that I hope we preserve throughout all these difficulties that we are now trying to handle. If regulation is to be necessary and if we are to keep within, as I define it, the democratic structure and keep the associations and the private timberland owners, the counties, the electorate group of the people independently free to challenge at all times any enactments made under such regulatory process, my own feeling is that the industry has nothing to fear, but something very definite to gain."

In applying regulatory restraint, Mr. Silcox suggested an approach through the county "with the margin of sovereignty exercised by the federal and state governments." This would make possible a factual analysis of forest conditions within a county and bring into focus not only the question of management within the area but also the relation of local forest properties to industry, employment and general economic welfare. Citing taxation as an example, he said:

"I have the feeling that our approach to the problem of forest taxation besides our detailed studies has been largely convincing ourselves of the necessity for it. We have not yet gotten very far in convincing those who have the power of taxation of the necessity for a modification of the taxing system.

"I think that with these objectives set up, with the margin of restraint necessary to make them effective, the counties can see the necessity for a modification of the taxation system which will make it possible to operate these forest properties to achieve objectives more than that of simply getting the maximum revenue over the shortest period of time, and it will have the distinct advantage of getting forestry down to the grass roots where people are going to exercise the right of their vote in determining policies.

"So in stating this case under the subject on which I am to talk—the federal approach—I can see no fundamental difference in our objectives. We are all agreed, according to the general statements set forth, on the necessity for sustained yield management of our timber properties, we are all agreed that those properties should be managed with some degree of social accountability in their management, we are all agreed that they should be fire protected for the purpose of making sure we have something to manage. We are not taking issue, and I don't see where there is any ground to take issue, I say again, on those major objectives.

"One subject which I hope this meeting will discuss is the one I have raised. It may be too much to hope that an industry will even recognize the necessity for some restraint to be imposed upon it by sovereignty. I can quite recognize that attitude. On the other hand, I think that there ought to be explored, and I think that the effort here is to explore, whether we have fundamental differences of point of view or not, this whole subject and to find whether I am all wrong in believing that it cannot be handled wholly within the field of voluntary action.

"If that is my belief, which I am expressing here quite frankly, then of course the federal approach involves fundamentally probably three things: (1) bringing back into public ownership some of these lands, to be directly managed by the public as a balance wheel in the situation; (2) a form of regulation over the operation on private lands which will assure to those of the industry who follow the objectives laid down here, protection against those who do not, and assure to the public that those who do not want to conform to these objectives can be brought under restraint and made to conform; (3) a type of appropriation and legislation which will recognize the overall public responsibility in fire protection and in disease control and matters in which the public has a fundamental responsibility."

John B. Woods, Forester of the Association

From the standpoint of industry's position in respect to conservation, the outstanding address of the conference was made by Colonel W. B. Greeley, former Chief Forester of the United States and now secretary-manager of the West Coast Lumbermen's Association. Colonel Greeley was the chief speaker at the banquet tendered the Conference by the National Lumber Manufacturers Association at the Mayflower Hotel on the evening of April 8. He (*Continuing on page* 262)

TREES THAT CONQUERED

BY M. B. JENKINS

PIONEERS possessed of initiative, vision, self-reliance and courage in working out their problems have occasionally established helpful patterns for the thousands who follow them. Of such is J. J. Lydick, of Craig, Nebraska, whose contribution is in the growing of evergreen windbreaks and shelterbelts.

Still in middle life, for he began planting only twenty-five years ago, the beauty and symmetry of his farmstead plantings have gained for him national recognition. It would be difficult to find among farm plantings anywhere a more uniform stand, a greater harmony of color and species arrangement, or a more magnificent array of individual specimens of trees.

In 1933 the Nebraska State Capitol Commission cast about the State for specimen trees to beautify the grounds of the ten million dollar State House. The search led to the hills along the Missouri River bluffs in Burt County, and to plantings of Mr. Lydick. When first approached he refused to sell any of his trees. But when he realized that while rendering a valuable service to his State, the removal of every other tree from some of his rows of conifers would benefit the remaining trees, Mr. Lydick consented and the State bought forty-four concolor fir trees, uniform in breadth and twenty-five feet in height.

Much of the character and resourcefulness of Mr. Lydick is reflected in the story of how he became interested in planting evergreens. About 1910 he acquired 240 acres of gently rolling table land two miles from the loess hills which, with the bluffs and flats, extend twenty miles from the Missouri River. It was open land, devoid of trees. The average annual precipitation was twenty-eight inches, and the water table over sixty feet below the surface. It was a land of wind and dust, with wide extremes of temperatures.

Soon after he began to farm, hay fever so reduced his vitality that physicians advised him to move to the mountains. He needed, they said, a dust free atmosphere and the pungent odors of

Within the shelterbelt winter snow melts where it falls; winds cause little loss of soil moisture

THE PRAIRIE

pine, spruce and fir. So this young man who loved life and was so much attached to his fine farm made an important decision. He informed his doctors that if evergreens could save his life, he would, like Mohammed with the mountain, bring the evergreens to his farm.

Not wishing to spend the money necessary to purchase large quantities of seedlings, he decided to grow his trees from seed. He knew very little about the growing of evergreens, so he studied nursery practices, observed the tree species suitable for his locality, and inquired regarding the source of seed that would produce hardy, drouth-resistant trees. In the spring of 1912, Mr. Lydick planted his first seed beds to Austrian pine, white pine, Douglas fir, concolor fir, white spruce, Black Hills spruce and Colorado spruce. A few years later he included ponderosa pine and limber pine. These seed beds were continued from year to year, and produced the thousands of evergreens now growing on his land.

Before putting the seedlings into their permanent situations, he transplanted them two or three times in nursery rows. Then, when they were from three to five years old, but still too small to stand the hot summer winds, he gave them protection with screens of Norway poplar cuttings, set parallel to the rows of young evergreens. Then followed three or four more years of weeding and cultivation while the trees grew.

Mr. Lydick told me of the early and late hours he gave to his trees while farming his 240 acres of land. "No matter how badly I was needed in the field," he said, "I took care of my trees first." You may be assured, however, that his farm was never neglected. He told me also how his friends and neighbors ridiculed him for wasting so much valuable land and spending so much time growing trees. "It will never pay," they told him. Yet today every farmer within many miles would profit by an exchange of farms. On the open market, Mr. Lydick's farm would bring double the prevailing price an acre for like

Forty bushels of corn to the acre, while neighboring fields without shelterbelts were burning up

Not a mountain home—but mountain trees brought to the Nebraska prairie home of J. J. Lydick

farms in the same locality. The fact that he has not sold this property, nor offered it for sale, does not alter the fact that real value is there. Permanent, well-arranged farm plantings and crop shelterbelts are as much of an asset as cribs of corn and bins of wheat. They are as essential to agriculture as modern factory facilities are to industry.

The hardiness and present vigor of these plantings speak well for the wise selection of seed and choice of species. Even during the drouth years of 1934 and 1936 not a single conifer was lost. In 1934 the precipitation fell from twenty-eight inches to sixteen inches, and in 1936 to fifteen inches. Planted stands of broadleaf trees throughout the State suffered staggering losses, but the Lydick plantations kept green and growing. In a little over twenty-five years Colorado spruce have grown from ten to fifteen feet in height; concolor fir and Douglas fir from twenty to thirty feet; Austrian and ponderosa pine from thirty to forty feet; and Norway poplar from forty-five to fifty-five feet. Arranged with slower growing trees on the outside, the evergreens form an impenetrable barrier against wind and storm.

Within the zone of protection from these living green walls, Mr. Lydick says the average crops are more than double those which grow on the outside. In the drouth year of 1934, his potatoes yielded two hundred bushels to the acre, while other potato patches in Burt County dried out. Not a bushel of potatoes was grown within a radius of ten miles of his farm.

His corn field was not irrigated, but the yield was from thirty-five to forty bushels to the acre, while neighboring fields without the benefit of shelterbelts were burned up by hot winds. Likewise, his orchard was an inspiring sight. Apple trees were loaded to the breaking point with fruit of good size and quality, and close by were large patches of heavy yielding black raspberries. Even in normal years, Mr. Lydick said, the crops from the sheltered portions of his farm are nearly double those on the unsheltered areas.

When I asked how he accounted for such heavy yields, he told me how the winter snows melt where they fall. For years spring and early summer winds have caused little loss of soil moisture, nor have they carried away the valuable, light, humus particles of the upper soil. As he told me this he fondly dipped his hand into the soil to show how light and friable it was. "You don't need so much rain to grow crops," he said, "if you keep your soil like this."

He has never irrigated his trees, but has depended entirely on cultivation—and this only for the first three or four years. Yet he has produced specimen trees and symmetrical windbreaks such as cannot be matched in the State or in the United States. In addition, he has demonstrated how shelterbelts conserve soil moisture and increase land productiveness.

After all the years of toil, this man, who a quarter of a century ago suffered from hay fever, is in better health than when he started. He feels a keen satisfaction over having done something worthwhile, but when questioned, he will not admit that he has done anything that could not have been done by anyone else. Those who have seen his farm, however, know that J. J. Lydick has set up patterns which western agriculture can well afford to imitate for years to come.

The work furnishes an example of farm forestry such as was advocated by Nebraska's tree planting apostle, J. Sterling Morton. For over forty years that author and founder of Arbor Day advised the settlers to plant a portion of their grasslands to trees. He assured them the trees would control wind and water erosion, afford comfort (*Continuing on page* 251)

The "Island Queen," largest river boat in the world, which has been chartered to give those attending the conference a first-hand view of after-flood scenes along the Ohio River

ANNUAL MEETING TO BE HELD IN THE OHIO VALLEY

Water Conservation and Flood Control to Feature 62nd Annual Conference of The American Forestry Association at Cincinnati, May 31 to June 3

FEATURING the subject of water conservation and flood control, the sixty-second annual meeting of The American Forestry Association will be held at Cincinnati, Ohio, May 31 to June 3. The occasion will be a joint meeting with the Ohio Forestry Association and will provide a program that in point of interest and diversity will be unique in the annals of the two organizations.

Headquarters of the meeting will be the Netherland Plaza Hotel in Cincinnati, from which point boat and motor trips through the flood bowl of the Ohio River—scene of the great 1937 inundation—will throw into graphic relief the major problems involved in bringing under control the flood waters of a great river system. Those in attendance will have the opportunity to obtain a clear picture of the effects of a superflood upon the densely populated lower reaches of the Ohio River and to appraise the diverse engineering and biological methods by which the water conservation and control problem in the Ohio Valley is being attacked.

Special features of the meeting will be a day's boat trip on the Ohio River, giving a first-hand view of after-flood scenes and river works designed to deal with flood waters in the main river; and a day's motor tour of the Muskingum Watershed Conservancy District where source control and conservation of water is being undertaken on a scale unequaled elsewhere in the country. The Muskingum Conservancy is unique and of special interest in that it represents a large scale cooperative effort on the part of the Federal Government, the State and the local communities to deal with the flood problem in a given drainage basin.

These two trips will give a cross-section of flood control problems and methods from a river's source to its lower reaches where water from its far-flung tributaries converge to cause the greatest human suffering and property damage. For the trip on the Ohio, the famous *Island Queen*—largest river boat in the world—has been chartered. It has a capacity of 900 passengers, is of all steel construction and is equipped with four decks, cafeteria and other modern conveniences.

The opening sessions of the meeting—Monday, May 31—will be held at the Netherland Plaza, one of the most attractive and well appointed hotels in the Middle West. There will be a morning session at ten o'clock, an afternoon session at two o'clock, and the annual banquet of the Association at (*Continuing on page* 264)

Left, a scene in the Muskingum Watershed Conservancy District, to be visited by the conference

Right, in one of Ohio's beautiful State Forests

THE LIFE OF YOUR HOUSE IS UP TO YOU

The life of a wood house depends upon the care given it. Lower left, Town Hall, Esslinger, Germany, built partly of wood in the 15th Century. Center, the hundred-year-old house of Ralph Waldo Emerson as it appears today. Upper right, a victim of decay and termites because precautions were ignored

By GEORGE M. HUNT

HOW long will a wood house last? The answer is simple. A wood house will last as long as its owner wants it to, provided it is given reasonable care. In Europe wood frame houses are in use today that were built before Columbus discovered America. Likewise, in America, there are houses still occupied and in good condition that were built from lumber and timbers more than 200 years ago.

There is no secret about long life and satisfactory service in a house. The greatest destroyers of wood in buildings are decay and termites. In most parts of the United States it is a very simple matter to build a house in such a manner as to keep them out.

Decay in wood is caused by the growth of very low forms of plants, called fungi, that use the wood for food. Fungi cannot grow without moisture, however. Even the so-called dry-rot fungi must have moisture, although they have the ability to carry moisture many feet from the ground or other sources of supply and hence are able to destroy wood that appears to be dry.

So if you would avoid decay in your house do not allow the wood to be in contact with the ground or close enough to become damp. Do not place wood floors over damp concrete or let wood posts extend down into basement floors. If your house has no

basement provide good ventilation beneath it to remove the stagnant air that would otherwise carry moisture from the ground to the wood. Do not make the mistake of providing ventilator openings and then making them ineffective by covering them with bushes or vines. Do not permit moisture to accumulate from leaky roofs or defective flashing around windows, doors and chimneys.

When it is impracticable to avoid conditions favorable to decay in certain parts of a house it may be practicable to build these parts out of wood that has high resistance to decay. Nature has provided the heartwood of certain species with protective chemicals that make them decay resistant. Cedar, cypress and redwood are the most widely available of these species and most commonly used where such lumber is required. A fact of great importance in connection with these woods is that their sapwood, the lighter colored outer portion of the tree, is not decay resistant. Their durability is in their heartwood only.

Instead of naturally durable heartwood one may use wood that has been impregnated with suitable preservatives. This prevents the growth of fungi in wood by poisoning their food supply. Coal tar creosote is the most effective preservative known for wood that is to be used in contact with the ground. Its color and odor, and the fact that it cannot be painted satisfactorily, limit the usefulness of creosote for house lumber. But despite these disadvantages many houses have been built in which creosoted lumber has been used satisfactorily for sills, floor joists, and sub-flooring. Usually these are the only parts of a house that require treatment.

Preservative salts, including zinc chloride and a number of proprietary preservatives, leave the lumber clean, paintable, odorless, and suitable for uses where the lumber will not be exposed to the leaching effect of water. They are especially suitable for use in houses. Since a considerable quantity of water is injected into the wood when such preservatives are used, thorough seasoning after treatment is necessary before the lumber is placed in a building. A new type of preservative that is clean and contains no water is now coming into use for treating window sash, doors and flooring.

As important as the preservative is the method of application. Mere brushing, spraying, or dipping results in superficial penetration and therefore in slight protection. Thorough impregnation and deep penetration are necessary. This usually means pressure treatment, although it is not impossible to obtain good penetration by hot-and-cold bath treatment or by long steeping in preservative solution or paste. Another important thing is that lumber should not be cut up after treatment unless the preservative has penetrated entirely through it, for otherwise untreated wood is exposed to decay. Since it is not usually practical to avoid all cutting of lumber when building houses by conventional methods, the importance of 100 per cent penetration is apparent.

Following decay, which can be prevented by the several methods previously described, termites are perhaps next in importance in damaging houses. While not the terrible menace pictured in the literature of some so-called "termite exterminators," to ignore them is to invite expensive trouble.

Fortunately the precautions that are effective against decay are, for the most part, effective against termites. It is most important when using untreated wood, to prevent contact with the soil. Decay resistant species are not so resistant to termites and require practically the same protection as those that are not decay resistant. Well treated wood, however, is safe from their attack.

Where termites are particularly active they may build their tunnels over the foundation of a house. This can be prevented by constant watchfulness and destruction of all tunnels as fast as they are built. More certain protection is provided by the metallic termite shields advocated by the United States Bureau of Entomology. These shields consist of sheets of metal between the sills of the house and the foundation, extending outward and downward from the top of the foundation. Shields must also be placed around all pipes and conduits.

The same principles of new building apply to the house already built. The conditions that made the attack possible must be located and corrected. Decayed wood should be removed and replacements made preferably with treated wood.

Keep wood dry and prevent contact with the soil, or else use wood that is resistant to attack.

Close-up of house on opposite page. Improper construction and lack of care brought early destruction

POLLARDS ARE PICTURESQUE

By FRANK A. WAUGH

No tree-lover can be entirely pleased with a mutilated tree. Every sort of topiary work brings him a shudder. Yet pruning and tree surgery are such common practices these days that hardly any tree or shrub in park or home grounds can live many years without some mark of the shears and the saw. And sheared hedges might almost be called the framework of the garden.

To the artistic and romantic eye the most excusable mayhem is the pollard tree. You will see thousands of paintings and drawings with pollard willows by the stream—everything from the etchings of Rembrandt van Rijn to the Christmas cards in the ten-cent emporium. Certainly such trees are picturesque; and whether they grow in France or in Berkshire County, Massachusetts, they keep cameras snapping. Nobody is able to pass a good pollard, or a row of them, without making a few photographs.

Is it necessary to explain what a pollard is? Well, it is a tree which has been headed back and then allowed to make a new top. Perhaps it resembles a big whisk broom. And in spite of its artistic appeal the pollard has doubtless been made for purely practical uses. Willows have been customarily headed back in order to produce a heavy growth of long pliant shoots used in weaving baskets. Other trees are sometimes turned to similar employments.

But the story as I have heard it explaining why whole forests—small areas—have been treated in this way turns on a different hinge. In the royal hunting forests of England and the continent the trees had to be preserved as protection for deer and other animals of the chase. But the neighboring peasants still had some rights, and for one they could claim a supply of wood for burning. So they cut the tops of the trees, and from time to time, as the heads were renewed, they cut them again and again. Thus the custom of producing pollards became fixed.

During a recent trip about England I found a number of these picturesque old trees. For picturesque they certainly are; and, as the reasons for making pollards have now pretty much vanished, the examples to be seen are mostly quite aged, some of them hundreds of years old. Perhaps the most notable specimens in all England are the Burnham Beeches.

Old England's amazing beeches in Burnham Woods

This area of a few hundred acres of rather wild forest or heath lies near Windsor and at easy commuting distance from London. I would not advise anyone to do it in less than a full day, for there is so much to see and such novel scenery at that, that a little time is necessary to get the proper slant on it. And of course everyone will want to make some photographs. In this undertaking, however, plenty of time must be taken—time for study and lots of time for individual exposures. No

Picturesque pollard hornbeams in Epping Forest

snapshots here. (Technical note: Use a tripod, choose a cloudy or rainy day and give time exposures—twenty seconds to two minutes.)

These big old beeches are about the most amazing trees one will see in a lifetime. They are so large, so massive, so dignified that one immediately creates a new category for them. They are no longer common beech trees, they are the Burnham Beeches—in short, they are pollards and different. They are old; probably no one knows just how old, but they count into the hundreds. Shakespeare mentions them in Macbeth, Act IV, Scene 1:

> "Macbeth shall never vanquished be, until
> Great Birnam wood to high Dunsinane hill
> Shall come against him."

Then in the sequel, be it remembered, the enemy appeared camouflaged in the branches of Burnham Wood which they had cut for the purpose. Perhaps this was the time of the original pollarding.

In Epping Forest, north of London, there are many curious and interesting pollards. As one goes out from the great city he finds at the very entrance to the forest several acres given to old English oaks, the oldest and most fascinating specimens being again the pollards. The visitor must have a remarkable camera resistance if he does not use at least one roll of films here. Then, entering the forest by the nearest forest path he heads for the section known as High Beach. Hereabout there lies an area well stocked with hornbeams, all cut to pollards.

In the two examples already cited, the eye sees and studies the individual trees, but here there are too many and they grow so closely together that the stranger sees the pollard forest. The esthetic and psychological effects are entirely different, just as the silvicultural conditions are different. This, too, is a fascinating scene. Again the camera has to go to work and once more the tripod must be used and long exposures given.

The undergrowth here, especially the ground cover, is very interesting, but that is another story.

It is not to be hoped nor expected that American foresters and landscape architects will take to the idea, or that they will start out forthwith to adorn all our native parks and forests with a novel crop of pollards. Should the CCC boys begin to behead the woods in Virginia or Oregon there would be an immediate riot. Yet the idea is good, especially in Europe; and even in America, somewhere, on a small scale and in a secluded area, some ingenious artist, with a good faculty of self-restraint, might be allowed to experiment a little.

Meantime every visitor to England is heartily recommended to put Burnham Beeches down for one day in his calendar.

"A LADY IN A GLITTERING GOWN"

The White Birch is a lady in a glittering silver gown,
A lady with the graces of the gayest belle in town.
In her raiment soft and dainty she's a dresden shepherdess,
With her petticoats a-flutter as the breezes blow her dress.

By Adele Middleton Russell

GHOST TOWNS STILL WALK

(*Continued from page* 217)

farm hands, few of whom had ever seen a sawmill, much less the "greatest lumber manufacturing plant in the world." And their efforts to engage in a strange industry were such as to bring the term *hoosier* into use to designate a man who doesn't know his job.

But *hoosiers* or not, the lads somehow got around to cutting out the Cosmopolis timber, and now that town exists solely as a bedroom for millworkers who make their living in nearby Aberdeen. Its population, once more than 3000, is nearer 300 today.

Looking down at Three Lakes, Washington, from an opposite hill, one sees the whitening skeleton of a vast sawmill, a rambling affair that covered many acres, rising up from the surrounding second-growth. Close inspection reveals the gigantic corpse, a mass of decaying timbers set in the jungle that encroaches year by year and which in time will decently bury all that was the Three Lakes Lumber Company, one of the big plants in northern Washington.

Three Lakes came into being in 1903, cut close to 200,000 feet of lumber a shift, rose to a population of 1500 and had a fine school, two churches, and a lodge hall, and then, due to financial troubles, it went down and out almost overnight. The company operated a common-carrier railroad, and today, at the railroad crossing, one sees the crossed arms of a warning sign—warning of trains that haven't passed in a decade. Set in a spot of great natural beauty, the ghostly village is quiet enough and the quiet is broken only by the croaking of bullfrogs in season.

In southwestern Washington, perhaps, is the best, or worst, example of the mass-production of ghost towns. On a strip of railroad sixty-five miles long one can see the remnants of no less than nine former sawmill towns—not a smoke appears today, nor a wheel turns.

All of these towns came into existence in the nineties, and they went out like lights in the late twenties and early thirties. There simply isn't anything at Littell, other than a water tank, set now in a clump of alders, to mark where the 100,000-foot mill stood. A few miles beyond there is, or was, the lively lumber village of Dryad, which means "wood nymph". The Dryad mill could and did cut close to a million feet of lumber a week and for thirty-five years it was a steady producer. All is peaceful there today, and the plant is rusting away silently, while moss and alders grow high up the log slip.

Next along the line was Doty, with a chamber of commerce and a weekly newspaper, a picture show, stores, lodge halls, churches and schools. But in 1929 the mill went down for good, and Doty is one of those slightly wider places in the road.

The town of McCormick had its birth in 1896. The mill there was notable for its sun dial, constructed by some lover of the arts and sciences on the lattice work at the end of the mill proper. The dial had Roman numerals and it was said by mill hands to be accurate as any. If there was ever another sun dial on a sawmill in the United States, this writer never heard of it.

But mills in those days had individuality about them. A mile beyond McCormick was Walville, and the famous Big Black Cat of Walville. Built about the same time as the McCormick mill, the Walville plant was junked last winter.

For forty years strangers passing by on the train marvelled at the figure of a large black cat that appeared in bold relief on the end of the mill. The cat was made of wood, with teeth made of clamshells, and its whiskers of staunch haywire. The cat's back was arched, its tail high, and when you got close up you could see that the animal was snarling, showing its wicked teeth.

In early days the Walville plant was manned by men of Michigan who were members of the Order of Hoo Hoo, and one of them made and set up the animal. It was highly thought of by white and Japanese employes alike, and little brown men often took their little brown children on a Sunday for a close-up view of the cat, which they held to be some sort of magic of the White Devils. It was good magic, too, for although the Walville plant was threatened by fire more than once, it survived and it was laid low only by the exigencies of timber and of finance. By the time this appears in print, both the sun dial of McCormick and Walville's big black cat will be gone.

After leaving Walville one passes, without realizing it, three once thriving sawmill towns in Frances, Globe and Lebam.

Perhaps the nearest to a ghost sawmill region in Oregon is that served by the once-famous Tillamook Line of the Southern Pacific Railroad. For many years, when in its heyday as a lumber producing section, the slogan of Tillamook's boosters was "Trees, Cheese and Ocean Breeze". It will presently have to revise that phrase, so far as the first commodity is concerned.

Readers of AMERICAN FORESTS may recall reading in these pages of the gerrymandering of timber lands in Tillamook County. ("Gerrymandering the Tall Uncut" August, 1936, issue.) School districts there were made to go rambling in every direction so that more timber taxes could be had to teach young Tillamookers to read and write and to feed Tillamook's hungry politicians. Well, they got their taxes, and in defense lumbermen took to cutting the heavily taxed timber as quickly as they could. Then came August, 1933, and one of the most destructive forest fires in history, when more than eight billion feet of Tillamook timber was destroyed.

In the meantime Tillamook's sawmills began "cutting out" with great regularity. The big plant at Cochran, a 100,000-foot affair, was built only in 1917. It burned down a few years ago and was not rebuilt. Further on was Wheeler, which could turn out (*Continuing on page* 258)

AROUND THE STATES

CONGRESS ASKED TO MAKE CCC PERMANENT

A permanent Civilian Conservation Corps, with a maximum strength of 315,000 enrolled men, and, with the exception of enrollees and Army Reserve Corps officers, under civil service, was outlined in a bill introduced in Congress April 6 by Representative William P. Connery, Jr., of Massachusetts.

Under the bill, enrollment would be limited to "unemployed and needy" young men between the ages of seventeen and twenty-three, and to a limited number of war veterans and Indians. It provides that not more than 300,000 men should be enrolled at one time, of which 30,000 may be war veterans. In addition, camps are authorized for 10,000 Indians and 5000 territorial and insular possession enrollees.

The director of the Corps will be vested with considerably more authority. Under the present setup, the director's authority has been limited chiefly to that of coordinating the various cooperating government agencies. The bill provides that he shall have "complete and final authority in the functioning of the Corps, subject to such rules and regulations as may be prescribed by the President."

He is, for example, authorized to provide for the employment of the Corps on public works "for the protection, restoration, regeneration, improvement, development, utilization, maintenance, or enjoyment of the natural resources on lands and waters belonging to or under the jurisdiction or control of the United States." He is further authorized, by direction of the President, to undertake projects on lands "belonging to or under the jurisdiction or control of counties, and municipalities and on lands in private ownership, but only for the purpose of doing thereon such kinds of cooperative work as are or may be provided for by Acts of Congress, including the prevention and control of forest fires, forest tree pests and diseases, soil erosion, and floods." The director is also authorized to appoint such civilian personnel as may be deemed necessary for the "efficient and economical discharge of the functions of the Corps, in accordance with the civil service laws and regulations."

The bill provides that one purpose of the Corps would be that of providing vocational training. Undoubtedly this means the continuation of the present educational program.

FORTY-FIVE ASSOCIATIONS OPPOSE REORGANIZATION PRINCIPLE

While the Joint Committee on Reorganization of the two Houses of Congress continues to consider in executive session the President's sweeping recommendations as set forth in the Brownlow Report, opposition to that part of the plan dealing with conservation continues to roll up. More than forty-five national, state and regional organizations are now on record against the proposal to split the forestry, wildlife and soil conservation work of the government between two departments as is indicated by the proposal to make the Interior Department into a Department of Conservation. These organizations broadly cover and represent the conservation, agricultural and scientific fields.

One of the latest organizations to recommend its opposition to the proposed creation of a separate Department of Conservation is the Michigan Academy of Science, Arts and Letters. In a resolution passed on March 20, the Academy declared: "The proposed Department neither would nor could include all conservation activities of the Federal Government. It would merely build up the present Department of the Interior by adding to it certain functions now performed by other units, notably the Department of Agriculture. The latter is particularly equipped and has long demonstrated its ability to handle problems, both administrative and investigative, dealing with the conservation of organic resources and should be strengthened rather than weakened in this broad field."

Speaking for the Conservation Association of Los Angeles County, its president, W. S. Rosecrans, declared that the principle underlying the proposed Department of

EDMUND SECREST
New Director, Ohio Experiment Station

Conservation would be disastrous to local conditions.

"We feel strongly," he said, "that activities of the two departments should be more clearly defined by stating specifically that the Department of Agriculture shall administer public lands used for the growing of crops including trees and forage or for the protection of agricultural lands. Thus the administration of public lands used for the production and protection of our replaceable organic resources would be a function of the Department of Agriculture, leaving to the Department of Conservation the regulation and use of our naural inorganic resources—our minerals, oils, etc.

"To leave the definition of activities in its present ambiguous condition might even lead to a situation where assistance and advice in the handling of lands for the production of tree crops on private lands would be a function of Agriculture, while the production of similar crops on lands owned by the Federal Government would be the function of an entirely different department. Such a situation is unthinkable and could not but result in duplication and increased costs to the public.

"The application of such a principle to our local conditions would be disastrous. While the production of timber does not concern us, the production of water does—and vitally. At present the Department of Agriculture is engaged in far-reaching experiments and research to determine the form of management of our local forests, both public and private, that will result in the production of the maximum water yield. The results of these experiments are applied to the management of local watersheds as rapidly as determined.

"What the result would be if the experimentation were carried on by one department and the administration of the lands by another with no obligation to make use of the results, can easily be imagined. Further, the use of our local watersheds for recreation is tremendous. Such use constantly carries with it the threat of destruction by fire and can only be permitted under the closest supervision and strongest regulation. This the Department of Agriculture, realizing that our existence as an agricultural community depends upon these watersheds, has given us. We naturally feel that a department so entirely agricultural-minded will recognize our needs to a greater degree than one concerned so largely with the resources of a different nature and with recreation as exemplified by our National Parks where no conflicting or paramount uses can exist."

At its annual meeting in Hartford, Connecticut, late in February, the Connecticut Forest and Park Association adopted a resolution opposing "the principle set forth of dividing the conservation of soil and its organic resources along purely artificial administrative lines of public versus private ownership." The conservation of the soil with its crops of timber, wildlife, forage, and agricultural products, the Association declares, involves a unified program of research, regulative and administrative and extension or educational functions which can only be properly coordinated in the Department of Agriculture in which this program originated and has been successfully developed.

Continuing further the resolution stated: "The Department of Agriculture is the Department of Conservation, by wise use, of the soil and its organic resources. The designation of another department as the Department of Conservation, and the proposed dismemberment of forest and wildlife administration by such a transfer of forests, wildlife refuges, and grazing can only lead to duplication, loss of efficiency and a serious set-back of well established agencies and programs which now have the confidence and respect of the public."

SECREST TO HEAD OHIO STATION

Edmund Secrest, state forester of Ohio, has been named to succeed Dr. C. G. Williams as director of the Ohio Agricultural Experiment Station at Wooster. He will take office on July 1, when Dr. Williams will retire. Mr. Secrest, who has also been serving as associate director of the Station, is a native of Kansas, and a graduate of the Kansas State Agricultural College. He was appointed state forester of Ohio and became associated with the Station in 1906, after serving with the United States Forest Service from 1902 to 1905.

He is president of the Ohio Forestry Association and is a past president of the National Association of State Foresters.

MEXICAN WILDLIFE TREATY RATIFIED

A treaty between the United States and Mexico for the protection of migratory birds and game mammals, which had been pending for a number of years, has become effective following the exchange of ratifications at Washington, D. C., by the two governments. The treaty was made public by a proclamation by President Roosevelt on March 15. Laws and regulations under the treaty will be administered by the Department of Agriculture.

By this treaty, the authority of the United States over migratory birds while they are in this country now has a dual basis—Canadian and Mexican treaty obligations—and the three countries are now linked in cooperative efforts to extend protection to wildlife in general. The new treaty also provides federal protection for 140 species and their subspecies not protected under provisions of the convention with Great Britain in respect of Canada. The treaty in respect of Canada protects birds that migrate between the United States and that country, but many birds that cross the Mexican border in their northern migrations do not reach Canada. Among the species added to the protected list by the Mexican treaty are certain ducks, white-winged doves, mockingbirds, thrashers, horned larks, blackbirds, grackles, cowbirds, phainopeplas, buntings, finches and sparrows.

The Mexican treaty also provides for the future inclusion of other migratory species "which the Presidents of the United States of America and Mexico may determine by common agreement." Neither game mammals nor migratory birds, says the treaty, may be transported, dead or alive, over the Mexican border without a permit from the government of each country.

The convention was signed February 7, 1936, by Josephus Daniels, American Ambassador to Mexico, and Eduardo Hay, Foreign Minister of Mexico. Major E. A. Goldman, of the United States Biological Survey, and Ing. Miguel de Quevedo and Juan Zinser, of the Mexican Department of Forestry, Game, and Fish, assisted in the technical phases of the negotiations. The United States Senate on April 30, 1936, advised and consented to the ratification of the treaty, and similar action was taken by the Mexican Senate on November 27, 1936. President Cardenas of Mexico signed the ratification decree on December 11.

An Act of Congress approved by President Roosevelt on June 20, 1936, providing for the amendment of the Migratory Bird Treaty Act of 1918 to make the law applicable to the treaty with Mexico as well as to the treaty in respect to Canada, came into force on March 15, 1937, upon the President's proclamation of the exchange of ratifications of the treaty with Mexico. The amended act authorizes the appropriation of federal funds for putting into effect the treaties and acts and regulations thereunder, for cooperating with local authorities in the protection of migratory birds, and for making necessary investigations.

Other provisions of the Mexican treaty include the limitation of migratory-bird hunting to a maximum of four months in each year; closing the season on ducks in both countries from March 10 to September 1; and establishment of refuge zones in which the taking of migratory birds will be prohibited. The new convention "shall remain in force for fifteen years and shall be understood to be extended from year to year if the high contracting parties have not indicated twelve months in advance their intention to terminate it."

HEYWARD GEORGIA FORESTRY DIRECTOR

Coincident with the passage of a new basic act creating the Natural Resources Department for the State of Georgia, and discarding the Georgia Forest Service as previously established, Frank DeCaradeuc Heyward, Jr., has been appointed Director of Forestry by Governor E. D. Rivers. Mr. Heyward succeeds Elmer E. Dyal—an appointee of Governor Eugene Talmadge.

As a native of Georgia and a technically trained forester, Mr. Heyward meets the requirements of the new law, which authorizes appointments for four years. He is a graduate of the University of Michigan, with a Master's Degree in Forestry from the University of California. During the past several years he has been employed by the Southern Forest Experiment Station in work associated with naval stores, with headquarters at Lake City, Florida.

TREE PLANTING LAW FOR KANSAS

Land owners of Kansas will be required to plant shrubs, grasses and trees as means of controlling soil erosion in accordance with an act signed on March 23 by Governor Walter A. Huxman. This repeals a law previously passed by the State Legislature requiring the listing of soil when ordered by the county commissioners. This act was attacked in the State Supreme Court on the ground that it violates statutes against trespassing and invasion and was not uniform in application.

The secretary of the State Board of Agriculture is charged with the enforcement of the new act, but authority to order the planting of trees, shrubs, or grasses is vested in the several boards of county commissioners, who may issue warrants in payment for the work.

ANGLERS SPEND $500,000,000

According to Frank T. Bell, United States Commissioner of Fisheries, anglers in the United States put into circulation during the past year approximately $500,000,000.

The licensed angler in the United States in 1932-33 paid an average of $1.39 for fishing licenses, and in 1934-35, $1.36, according to Commissioner Bell. An average of less than three per cent of his total expenditures went for fishing licenses, and ninety-seven per cent was shared by outdoor fitters, transportation companies, distributors of gasoline, oil and motor supplies, guides, boat captains, fishing tackle dealers, hotels and innkeepers.

The sportsmen of California spent $63,000,000 in that State in 1936; the average expenditure by the angler was $116.80. In Utah the anglers spent $3,000,000 whipping mountain streams. Visiting fishermen and hunters bring into the State of New Hampshire an annual income of approximately $6,000,000, while New York enthusiasts spend $47,000,000 annually.

COUCH TO DIRECT WILDLIFE RESEARCH

Cooperative wildlife research and management projects — under supervision of the Biological Survey—at land grant colleges in Alabama, Connecticut, Iowa, Maine, Oregon, Texas, Utah, Virginia and Ohio will be directed by Leo K. Couch, biologist of the Survey, it has been announced. He will be an assistant in the Section of Wildlife Surveys of the Bureau's Division of Wildlife Research.

During the past year Mr. Couch assisted in the investigation and inspection of eastern National Forests in relation to wildlife, and as a liaison officer between the Biological Survey and the Forest Service he helped develop plans for efficient management of wildlife on federal forest areas now being improved under the Emergency Conservation Work program.

At these nine colleges investigations are under way to learn how to increase, maintain, and manage wildlife resources. Demonstration areas also are maintained there to show how facts found in research can be applied in a practical manner. Also in cooperative work with several Forest Service experiment stations, Mr. Couch will direct the Survey's research on the relationships of wildlife to forestry.

DR. THOMAS ELMER WILL DIES

Dr. Thomas Elmer Will, well known educator and conservationist, and former executive secretary of The American Forestry Association and editor of *American Forests*, died early in March at his home in Belle Glade, Florida. He was seventy-five years old.

Dr. Will was born at Stones Prairie, Illinois, and after graduation from the Illinois State Normal School launched upon a career as an educator, attending the University of Michigan and Harvard University, specializing in history, economics and sociology. After teaching history and political science for several years at Lawrence University, he accepted the chair of political economy at Kansas State Agricultural College, later becoming president of that institution.

His great interest in forestry and conservation began with his association in Florida with Dr. John Gifford, one of the foremost conservationists in the country. He maintained this interest up until the time of his death.

REWARDS TO CHECK FOREST FIRES

A reward of fifty dollars offered by the Conservation Commission of West Virginia for information leading to the arrest and conviction of anyone guilty of causing an incendiary forest fire has bolstered the efforts of state officials to check the outbreak of flames ravaging timberlands in West Virginia.

The Forestry Division posted the reward after 125 new fires starting within a five-day period in the southern part of the State brought about acute conditions calling for emergency measures.

Numerous reports of incendiarism were received and checked. Several suspects were arrested. Other fires were caused by carelessness in tossing lighted matches or cigarettes into the dry forest lands. Carelessness in burning brush also caused a large number of fires, some of which destroyed fences and outbuildings. The Forestry Division called attention to the law which makes a person responsible for all damage caused by a fire in the woods or fields which gets out of control.

Penalty for conviction of incendiarism in a forest is $25 to $100 fine or not more than ninety days in jail.

CCC OBSERVES FOURTH ANNIVERSARY

President Franklin D. Roosevelt led the nation on April 5 in observing the fourth anniversary of the Civilian Conservation Corps. In a message to the Corps he said:

"Four years ago, the Civilian Conservation Corps was launched on a nation-wide scale to supply employment to young men unable to obtain work and to develop and protect our forests, parks, fields and streams. Today the results of this program are apparent in every section of the country.

"I am sure that the nation is proud of what the Civilian Conservation Corps has accomplished in affording new opportunities to young men and in improving and protecting our natural resources. You men of the Civilian Conservation Corps have helped the nation. In return, you have benefited physically and spiritually. It is quite fitting that you, in your camps, celebrate the completion of these four years of work. I am happy to have the opportunity of expressing to you my heartfelt congratulations and my best wishes."

In the 2,002 CCC camps throughout the nation, "open house" observances were held during the week, following a testimonial dinner to Robert Fechner, director of the Corps, in Washington.

At the same time Director Fechner announced that 1,700,000 young men and war veterans have been taken from relief rolls during the last four years and put to work on useful conservation projects.

During the same period, he said, more than $700,000,000 was paid out by the CCC for foodstuffs, wearing apparel, work equipment, automotive equipment, and other supplies. That the CCC has been effective as a relief measure, he pointed out, is indicated by the fact that during the past four years enrollees have sent home to needy dependents an aggregate of more than $360,000,000.

"The CCC has vitalized public interest in the needs of conservation and advanced a constructive program of great present and future value to the nation. The manpower and funds of the CCC have permitted tremendous expansion of protection, improvement and development programs in national and state parks, in national, state and private forests and upon public lands. The forest protection system of the country has been substantially strengthened. Under the general heading of forest protection, enrollees fought the three great enemies of the forest—fire, insects and disease. They expended 3,800,000 man-days fighting forest fires. They conducted campaigns against insects and such destructive diseases as the white pine blister rust over 15,000,000 acres. In the way of physical protective improvements, the CCC built 87,000 miles of truck trails, minor roads, highways and park roads, constructed more than 45,000 miles of telephone lines and erected more than 3,000 fire towers.

"To date, the CCC has planted more than 1,000,000,000 trees, most of them on waste lands, thus initiating the restoration of these areas to productive use. The annual production capacities of public nurseries have been multiplied as a necessary step in speeding up tree planting programs. Thousands of public camp grounds have been developed as a part of a nation-wide recreation program. Largely as a result of the stimulus given state park development through the availability of CCC labor for improvement purposes, state park acreages have been increased by more than 700,000 acres. Erosion control programs advanced by the CCC have benefited millions of acres of farm land.

READERS' FORUM

RESTORING WISCONSIN'S MARSHES

SIR: One of the most significant phases of the conservation work carried on by the Works Progress Administration in Wisconsin is the reconversion of several hundred thousand acres of former marshland to its original condition as a natural game refuge and vast water pocket for the State. This whole area, comprising about 430,000 acres in central Wisconsin, was drained thirty years ago during an agricultural land boom, but the soil proved submarginal for agriculture. The continuous draining of the ditches soon dried out the peat soil which covered the territory, reducing the marsh to a virtual desert.

When the program is completed, this land will again become economically productive as a wild fur and game habitat and as a cranberry growing center. Destitute farmers who remain in the region will be removed to other sections by the Rural Resettlement Administration. These WPA drainage control projects will greatly advance Wisconsin's program of intelligent land utilization which is involved in the conservation of the State's natural resources.—*M. W. Torkelson*, Madison, Wisconsin.

WANTED—A SOLUTION

SIR: I have read W. C. McCormick's very sensible and analytical article, "Where Are We In Forest Education?" in the March issue of AMERICAN FORESTS. Congratulations. He has honestly faced the fact that we as foresters have failed in our objective. Instead of patting himself and us on the back, he admits our failure.

I have been in Florida for the past six weeks and it has certainly come forcibly to my attention that our educational program has failed. Escambia County burns almost 100 per cent each year. Somewhere, somehow we ought to find a way to stop this terrible situation. I am totally unable to offer a solution, but the problem represents a challenge to the whole profession. I personally hope that after a few more months down there some clue may disclose itself to me that might be helpful.—*Thomas W. Alexander*, Asheville, North Carolina.

THE DESTRUCTIVE STARLING

SIR: In 1924 the first starlings came to my sanctuary at Kingsville and, to tell the truth, I rather welcomed them. But in 1927 and 1928 they began to wear out their welcome, for they ate up all the bob-white quail food I had hanging over the premises. In 1929 and 1930 they drove out the ten thousand purple martins that roosted here. I had one hundred occupied mourning dove nests on less than one acre and these birds are driving them out. They have driven out over ninety per cent of our beautiful red-headed woodpeckers.

I declared war on the starling in 1931, building a starling net and trap. In a short time we had caught, drowned and buried over 17,000—but a million more came to their funeral. Then the Italian population of Windsor came down with nets and caught and trucked away approximately 200,000 birds. These were used to feed the hungry.

My personal findings, after observing the starling under all conditions, are that they are driving out some of our best weed seed, insect destroying and song birds, such as the Kentucky cardinal, the mourning doves, purple martins and woodpeckers. They are the worse weed seed distributors America has ever known. They carry deathly chicken diseases. They are destructive to fruit and vegetables, and are death to trees in which they roost. Too, they are lowering public opinion and appreciation of bird life in general.—*Jack Miner*, Kingsville, Ontario, Canada.

MORE ABOUT BLACK LOCUST

SIR: As a follow-up to my letter which you published in part in the READERS' FORUM for March, you will be interested to know that the other night I encountered on the train a friend who is head of the research department of an important manufacturing pharmaceutical company. He is interested in industrial uses for farm products. When I mentioned this black locust question, he recalled that his firm was using a material made in Europe from the locust seeds. Since then, I have the following communication from him:

"Regarding the locust, I find that we are purchasing a very high grade powdered gum from the Kem Products Company, 229 High Street, Newark, New Jersey. I am inclined to think that these people import the material from abroad. There is a firm in England called the Tragasol Company, located at Hooton, another one in Italy and one in France, who prepare "gum" and the powdered seeds by removing the brown coating and the yellow germ from these stone hard beans. It is interesting in this respect also that the locust bean itself, not the seeds, is used in cattle feed in this country. I know of one firm which imports this in quantities of 300 tons at a time. These beans come with the seeds taken out of them, and most of them come from the Isle of Cyprus at the east end of the Mediterranean. The seeds removed in that locality are taken by the Tragasol Company in England. Another source for the locust bean is Crete, Greece.

"The particular gum from this seed is, as I mentioned to you, used as sizing in the textile industry in England. How extensively it is used over here I cannot say."—*Wheeler McMillen, Editor, The Country Home Magazine*, New York.

THE CCC AS FIRE-FIGHTERS

SIR: For those who would criticize the CCC, I would like to relate a single instance.

At 1:40 a.m. on October 23, 1935, a lookout for the Los Angeles County Forestry Department telephoned the alarm of a fire starting in Los Flores Canyon just north of Altadena. He had to lift his voice above the roar of a fifty-mile wind that rocked the lookout house.

The same morning 2,000 boys of the CCC were asleep in fourteen camps scattered from Fresno, in the central San Joaquin Valley, to San Diego in the far corner of the State. A few hours later they were fighting forest fires on a seventy-four mile front in one of the most widespread outbreaks for many years in that region. Shortly after the first blaze was discovered there were five fires which eventually swept over 33,000 acres, burning a hospital, homes and summer cabins.

Twelve hundred CCC boys were first concentrated on two fires which broke out within a few hours of each other. In spite of the velocity of the wind, these fires were completely under control within eighteen hours—a record time for speed under these conditions. Within twenty-four hours the greater part of this army of firefighters had been transferred to other fires, where new forces of the CCC were thrown into the fray and where fire raged for four days.

In a nightmare of almost ceaseless fighting these boys were switched from one danger post to another. They traveled long distances at night, choked cold lunches down dry throats; tired and exhausted they staggered into their rest camps, only to be called out again to reinforce a weak place in the fire lines or turn back a new attack of the red hurricane. They endured with willingness and spirit all the trial and vicissitudes of veteran fire-fighters and they behaved like veterans. Over two hundred of them were treated by Army doctors and the California Forest Medical Corps for minor burns and injuries, but there were no casualties.

The highest praise of the service these boys rendered during this emergency was widespread in the editorial press of southern California. It was considered a test wherein their courage and determination augur well for their future success in life. The Forest Service, the State Division of Forestry and the county fire protection agencies have known and gladly acknowledged for the past three years that in fire protection alone the CCC has more than justified its existence, but probably never has there been such a dramatic demonstration of the value of the CCC as their ally in fire fighting.—*R. W. Ayres*, San Francisco, California.

OUTLAW STEEL TRAPS

SIR: You will be interested to know that we have introduced a bill in Wisconsin asking for the outlawing of the obnoxious steel trap. We are asking for the immediate withdrawal of all pole steel traps around pheasant farms because these traps are already illegal, because they are taking many of our hawks and owls which are already on the protected list.

The second part of our bill asks that all steel traps in the forests be replaced at the end of two years. This will give the trappers time to become accustomed to the idea, and they can also replace traps from time to time, which will not be such a hardship on their finances. We have had to compromise a bit and are not touching upon the steel trap which catches muskrats under water. However, if we win, it will be a great victory for our fur bearers, commonly known as predators and vermin, because the steel trap is extremely wasteful, destroying many animals which have to be discarded because the fur is not prime or because the skin has been injured during the struggle of the animal to free itself.—*Mrs. Edward LaBudde*, Milwaukee, Wisconsin.

PRAIRIE TREES

(*Continued from page* 236)

and better living conditions, and provide future wood supplies. He visioned the time when the roads and highways, from the Missouri River to the Rocky Mountains, would be lined with coniferous and hardwood trees.

It was through the influence of J. Sterling Morton that The American Forestry Association at a meeting in Omaha, Nebraska, in September, 1898, passed the following resolution:

"WHEREAS, this Association believes a proper series of windbreaks would so regulate the surface air currents as to materially reduce evaporation thereby conserving a precipitation that under those conditions would be ample for grain husbandry;

"THEREFORE BE IT RESOLVED BY THIS ASSOCIATION, That our National Congress should create a commission for the purpose of investigating the feasibility of establishing forest windbreaks on the plains of New Mexico, Texas, Colorado, Kansas, Wyoming, Nebraska and the two Dakotas."

No congressional action was taken on this resolution, but the document is a significant revelation of the plans and purposes of a forward-looking group of forestry pioneers. It reflects the greatest forest tree planting movement known to history, when three billion trees were planted in the State of Nebraska from 1880 to 1890. Many of those plantings failed, but others still live. Experience has demonstrated that ponderosa pine, eastern red cedar, western red cedar, and hackberry will withstand rigorous conditions of the driest areas. The Austrian pine and Douglas fir are proving almost as dependable.

That tree survival depends largely upon choosing species adapted to the soil and climatic conditions, giving proper attention to seed source, and providing adequate protection and cultivation during the first few years, is proved in the Lydick plantations. Fortunately, these are not the only instance of good farmstead and shelterbelt planting. Successful plantings of many other prairie farmers have resulted in increased crop production. The combined force of these results of pioneer vision and courage indicate that farm forestry is an important factor in the solution of the economic problems of this area. It deserves widespread consideration.

BIRDS OF PREY

(*Continued from page* 220)

while the other darted from behind. Of course the motion picture machine was in its case!

The following day we tried again at 5 a. m. The camera was scarcely in place when the male alighted on the nest with a headless meadowlark in its talons. He scarcely paused. Two hours later the female arrived. The sun was intensely hot and the young were eager for shade. The adult stared at the blind, but spread her wings to shelter her off-spring. The motion picture camera rolled out film thirty-two frames per second.

And so ended our experience with the ferruginous rough-legged hawks for the season. We had very little success, our pictures were mediocre. But we had seen many a sunrise over the Colorado prairies.

FOREST TRAVELOGUE

FISHING IN THE GREAT SMOKIES

In order to serve the pleasure of anglers in years to come, Uncle Sam is taking measures to conserve the fine fishing in the Great Smoky Mountains National Park. Fishing regulations for the season of 1937 state that certain streams have been closed for the purpose of restocking. Only designated main streams are to be fished. All tributaries will be closed.

Since the park lies on the borders of North Carolina and Tennessee, two time zones are involved. In the North Carolina section of the park hours for fishing will begin at 6 a. m. and end at 7:30 p. m., Eastern Standard Time. In the Tennessee section, which is in the Central Standard Time zone, the hours are from 5 a. m. to 6:30 p. m.

Open season for trout runs from May 16 to August 31, inclusive, for rock bass and small mouth bass from June 16 to August 31, inclusive.

Fishing is permitted only with artificial bait with but one hook. All persons fishing must have state fishing licenses issued by Tennessee or North Carolina, depending upon the section being fished. Streams in which fishing is permitted may be determined by writing the National Park Service, Washington, D. C.

SUN VALLEY FOR SUMMER DUDES

Sun Valley, in the Sawtooth Mountains of south central Idaho, which opened early last winter as the West's new ski center, is now making a bid for summer dudes. According to a recent announcement, Sun Valley Lodge, near the town of Ketchum, will open as a summer sports center on July 1, featuring the great Sawtooth wilderness area at its doorstep as its chief attraction. Two-day or longer pack trips into the wilderness, fishing, and stalking Rocky Mountain goat, bighorn sheep, mountain lion, antelope and elk, (with camera only) are to be featured with the more civilized tennis and swimming.

Sun Valley Lodge lies in a sheltered valley 6,000 feet above the sea. It was constructed and is operated by the Union Pacific Railroad.

The great wilderness just beyond Sun Valley, where the Sawtooth Mountains throw up their bulky summits, will be the scene of one of The American Forestry Association's Trail Riders of the Wilderness expeditions in August.

WYOMING FORESTS READY

The National Forests in eastern Wyoming will offer travelers much of interest this summer as facilities to meet public recreational needs are being developed.

The Medicine Bow National Forest, with its beautiful Snowy Range district is preparing to accommodate more than 100,000 visitors. The Bighorn National Forest will offer one of the finest recreational centers in the State around the 360-acre lake at East Tensleep. Preparations are being made to take care of 40,000 visitors in this remote region. On the Shoshone Forest, particularly in the Hanging Rock, Horsecreek and Wapiti areas, 30,000 visitors are expected while in the Washakie National Forest, probably the most inaccessible in the State, magnificent Glacier Peak and the Stratified Wilderness region will attract 6,000 or more.

PAINTINGS FOR YOSEMITE

Acceptance of two hundred and fifty paintings, left as a legacy to Yosemite National Park, in California, by the late widow of Christian Jorgensen, beloved painter of the glories of the Yosemite Valley, has been announced.

Mr. Jorgensen, for twenty years a familiar figure in the park, built by his own handiwork a studio where many prominent visitors congregated. This studio later became the first museum in Yosemite.

"SEE AMERICA FIRST" TOURS

Special low-priced tours of about three-weeks duration have been worked out by the leading western railroads in cooperation with the Reclamation Service and the National Park Service in an unusual "See America First" travel arrangement for 1937.

The tours will cover Yellowstone National Park, in Wyoming, Mt. Rainier National Park, in Washington, Pikes Peak, in Colorado, where special motor-bus side trips will enable the tourists to cover the points of greatest interest.

Many public work projects, including Boulder Dam, in Nevada, the Grand Coulee and Bonneville Dams, in the State of Washington, and the great Bay Bridge across San Francisco Bay, as well as the equally famous Golden Gate Bridge, will be visited by the touring parties.

PARKS AND THE FORESTER

By HERBERT EVISON

The National Park Service has found and recognized, as perhaps other agencies found and recognized before it, that in the business of selecting, planning, developing, protecting and operating parks, especially parks of the natural type, the forester and the special knowledge he possesses have an important and valuable function.

The forester knows, or is supposed to know, what factors favor tree growth, what tree diseases are and what are the best methods of controlling them; how to protect the forest whether from insect pest, or fire; and a great many other things which are his professional concern and which he is trained to apply. However, when he turns his forestry knowledge to park matters, he finds himself confronted by a different set of objectives than those which determine forestry practice as commonly conceived; and he finds himself compelled to adapt his knowledge and to modify his methods of applying his knowledge to the accomplishment of those objectives.

In the field of commercial forestry, it may be said generally that all those things may be done which are designed to make the forest bring the greatest economic return. Undesirable tree and plant species—that is, undesirable in the sense that they have little or no economic value—may be eliminated in order to provide a better chance to those of greater economic importance; planting projects are expected to be governed, both in choice of species and in method of planting, by the same economic considerations; protection practices are likewise expected to be of the most practical and thorough kind that available man-power will permit; the repeated harvest of timber crops from the same area without soil exhaustion is the end in view.

In the park field, however, the forester finds himself and representatives of other technical professions compelled to apply their knowledge to the accomplishment of two major purposes—"safeguarding the unhampered processes of nature"—and the provision of simple types of outdoor recreation with the minimum of modification of or interference with natural conditions.

Dr. E. P. Meinecke, of the Bureau of Plant Industry, Department of Agriculture, who has made many valuable scientific contributions toward the solution of park problems, has defined the field of the park forester in this way:

"The park forester, it seems to me, deals primarily with the wild vegetation; that is his legitimate field. He preserves the wild forest. He does his best to keep that forest in good growing condition. He works in large masses of trees and plants, and protects and fosters their growth. He is essentially, then, a biologist and an ecologist. If he wants to shape the forest to the best advantage, and to protect the forest against unfavorable influences, he must know and understand the life and laws of life of the plants that compose the forest. This lifts his attitude toward the forest out of the purely mechanical. All plants, all trees in the forest are objects of his care, and he must have an understanding of the conditions under which those particular plants or trees grow and of the effect that his treatment of the forest will have on those conditions."

In many types of forest the easiest and simplest way of making a fire-break is to strip a clean and straight swath through the forest. When it becomes advisable in a park, in order to accomplish identically the same purpose—that of creating an artificial barrier across the path of a possible fire, as a precautionary measure, the objective of preserving natural beauty as much as possible and the avoidance of glaring scars dictates departure from straight lines and the leaving of a certain proportion of the natural growth within the barrier zone.

Planting practice for the commercial forest appears to be pretty well standardized. It permits the use of whatever species is calculated to bring the greatest economic return, whether the ratio of the several species be the same or different from that found in nature, and whether the species be indigenous or not.

Planting projects in the natural park are usually undertaken on areas where logging, excessive fires, agriculture, disease, or insects, or some or all of these, have destroyed the native vegetation to such an extent that there is little or no prospect of a renewal of forest cover for a very long period of time. Here the effort is to restore or hasten the return of such a forest as originally grew there. That means the use only of indigenous species, in something approximating natural proportions. It means that two trees may be planted in a row, but never three—that the spacing shall simulate that of nature; and that once established, those "unhampered processes of nature" shall not be interfered with.

To the commercial forester, trails are primarily a means to the end of providing the readiest possible access — chiefly for protection—to all parts of the forest. What may be viewed along the way is almost wholly incidental. In the layout of park trails, we need the counsel of the forester, who is equipped to say where they should go in order to serve their protective purpose. Since, however, they must serve another purpose of equal importance, that of providing the park visitor a means of access to certain natural features that may interest or exalt him, and of doing that, again, with the minimum of disturbance of the natural appearance of the park, he must be willing to accept modifications of the strictly practical and utilitarian, in order to contribute more to the enjoyment of the trail user. He must even be content to leave certain areas trailless—to take his trails around, instead of through them, in order, for instance, to avoid interference with certain wildlife features or wildlife habitats that are counted as important assets of the park but that might be accorded minor significance, or none at all, in the commercial forest.

Forest improvement is, of course, one of the important means by which the immediate economic value of the forest is heightened. It is based primarily on the comparative economic values of different species of trees as well as of individual trees of the same species. The commercial forester, for instance, will speak of certain species as weed trees; of certain individual trees as undesirable. To the park forester "there ain't no such animal" as a weed tree; they all have their own contribution to make to the natural forest picture; and the very tree which, in a commercial sense, may be most undesirable, may, from a park standpoint be of exceptional value.

FORESTRY IN CONGRESS

By G. H. COLLINGWOOD

On April 23, after two days of general discussion, the House passed the Agricultural Appropriation Bill, H. R. 6523, which had been reported out on April 20.

No appropriation for forest land purchases under the Fulmer Act is included, while the current sum of $1,655,007 for cooperative fire protection under the Clarke-McNary Act is continued without increase. For eradication of Dutch elm disease there is $421,720. This is a reduction of $78,280 below the Budget estimate. The original estimate of $2,500,000 for forest acquisition was increased to $3,000,000. Large increases are allowed for administrative purposes, small ones for several research projects, but none for the Forest Products Laboratory.

Representative Luckey, of Nebraska, made an unsuccessful effort to include $100,000 for the Great Plains Forest Experiment Station authorized by the Act of June 15, 1936, and approved by the Bureau of the Budget; but it was defeated, as were all other amendments proposing increases to the bill.

In response to a question from Representative Eaton, of New Jersey, regarding the discretionary power of the Secretary of Agriculture to withhold expenditures from the appropriation for Dutch elm disease eradication until similar sums are available from state or local sources, Representative Cannon, of Missouri, in charge of the bill on the floor, replied, "If such an emergency arises which in the opinion of the Secretary of Agriculture justifies expenditure of this money without requiring the state or county or municipality to match it, he can do so; but it is hoped that under normal circumstances he will require the local unit benefited by the expenditure to match the funds, as is done in many other governmental activities."

The total appropriation for the Forest Service is $18,819,773; that of the Biological Survey $2,451,840; and that of the Soil Conservation Service $24,440,780.

The Senate subcommittee on Agricultural Appropriations under Senator Russell of Georgia will probably begin consideration of the bill before the end of April.

Early in April, William P. Wharton, Chairman of the National Conference on Dutch Elm Disease, Edgar G. Rex, of the New Jersey State Department of Agriculture, Representatives Charles A. Eaton, of New Jersey, and Richard B. Wigglesworth, of Massachusetts, requested the subcommittee on Agricultural Appropriations to increase in the budget recommendation of $500,000 for "determining and applying methods of eradication, control, and prevention of the spread of the disease of elm trees known as 'Dutch Elm Disease'" to $3,000,000. During the current fiscal year a regular appropriation of $261,156 for this purpose was augmented by $4,000,824 of emergency funds. The public groups represented by these individuals believe a direct appropriation of at least $3,000,000 will be more effective in eradicating the disease than emergency allotments for which no extended program of expenditures can be made.

H. A. Smith, State Forester of South Carolina and President of the Association of State Foresters, supported by other State Foresters and representatives of timberland protective associations, urged the same committee to increase the budget recommendation of $1,655,007 for cooperative fire protection under the Clarke-McNary Act to $2,500,000. State Forester Charles A. Gillett, of Arkansas, indicated that by the first of July Missouri will have qualified for cooperation, and without increased appropriation the additional state will curtail the amount available to the others now participating.

Representative Hampton P. Fulmer of South Carolina introduced several State Foresters and other public representatives to the subcommittee and asked that the Bureau of the Budget's recommendation of $1,000,000 for land purchases under the Fulmer Act of August 29, 1935, be increased to the full authorization of $5,000,000. He stated that twenty-eight states have qualified for cooperation under the Fulmer Act, and pending legislation in seven others may bring this to thirty-five before the next fiscal year. An appropriation of $1,000,000, the Congressman explained, will provide loans of less than $30,000 to each state, which are not sufficient to acquire a satisfactory nucleus of forest land for efficient administration.

R. H. Chapler of the Oregon Forest Fire Association, supported by Representative James M. Mott of Oregon, requested the committee to include authorization under which all forests on the unappropriated public lands in the western states would

be protected from fire by the United States Forest Service after the manner of the O and C revested grant lands.

The two bills making appropriations for the Department of Agriculture and for the Department of the Interior may be reported out and considered on the floor of the House before the end of April. At that time full transcripts of the hearings will be available.

H. R. 5858, drafted in the Department of the Interior, to place some 2,350,000 acres of revested Oregon and California Grant Lands under sustained yield and to provide means for reimbursing the counties in which these lands are located was discussed before the House Committee on Public Lands on April 13. Colonel W. B. Greeley, Manager of the West Coast Lumbermen's Association and former Chief Forester, stated that the majority of Oregon lumbermen believe the Federal Government should handle these lands as a permanent trust to assure their continuous productivity rather than to maintain the present policy of disposal and liquidation. He said that these lands affect the operation of some 350 sawmills, and urged the creation of advisory committees consisting of timberland owners. Such committees, he explained, should be authorized to advise and work with the government agency in charge of the lands. He also suggested the bill be amended to assure protection of all the lands in conformity with Oregon's forest fire laws.

Representative James W. Mott, in whose district are practically all of the O and C lands, urged administration of the lands under the Forest Service of the Department of Agriculture, whose experience he declared has equipped it for such work. He asked also for assurance that back taxes and future revenue will be paid the counties in which the lands are located.

During public hearings on H. R. 6180, for the creation of a permanent CCC, in the House Committee on Labor, on April 14, Representative Johnson of Oklahoma favored making the organization permanent, but opposed any reduction in the number of camps or enrollees.

The Norris Farm Forestry bill, S. 1504, was passed by the Senate April 20, but no action has been taken on it or on its companion, H. R. 4728, introduced by Representative Doxey, of Mississippi. The amended bill authorizes appropriations of $2,500,000 to enable the Forest Service, through the Secretary of Agriculture, to contribute as much as fifty per cent of the cost of forestation in a broad cooperative program of farm forestry through the state forestry agencies and land grant colleges. Under the bill the Federal Government may contribute as much as fifty per cent of the estimated direct cost of forestation, but cooperative work on existing woodlands is limited to the furnishing of information and advice. It is designed to extend cooperative assistance beyond the generally accepted field of farm woodlands and marginal lands to farms in the Prairie-Plains region to encourage plantings which will conserve soil, soil moisture, and water resources.

Appropriations for the Bureau of Fisheries amounting to $1,882,000 are included in H. R. 5779. This is an increase of $316,080 over the current appropriation and passed the House on March 25. The current appropriation of $15,000 for enforcement of the black bass law is reduced to $13,500, while for maintaining the Mississippi Wild Life and Fish Refuge, $17,900 is included, as compared with $18,000 for the present year.

CONSERVATION CALENDAR

Important bills in Congress with action from March 16 to April 22

BILL ENACTED

S. J. Res. 75 — GILLETTE — Making funds available for the control of incipient or emergency outbreaks of insect pests or plant diseases. Passed Senate February 24, 1937. Passed House March 15, 1937. Approved April 6, 1937. Public Resolution No. 20.

APPROPRIATIONS

H. R. 5779 — MCMILLAN — Making appropriations for the Departments of State, Justice, Commerce, and for the judiciary. Reported March 19, 1937. Passed House March 25, 1937. Passed Senate amended April 20, 1937.

H. R. 5783—JOHNSON—Second Deficiency Appropriation bill. March 19, 1937. Referred to the Committee on Appropriations.

H. R. 5961—FERGUSON—For the creation of a special "dust bowl" area in Kansas, Colorado, New Mexico, Texas, and Oklahoma, and making available $10,000,000 for the establishment of grass-breeding and experiment projects. March 29, 1937. Referred to the Committee on Appropriations.

H. J. Res. 319—WOODRUM—Making $1,000,000 immediately "available for the control of incipient or emergency outbreaks of insect pests or plant diseases, etc," in accordance with Public Resolution No. 20 approved April 6, 1937. April 9, 1937. Passed House April 12, 1937. Passed Senate amended April 22, 1937.

FORESTRY

S. 1504—NORRIS (H. R. 4728—DOXEY)—To authorize cooperation in the development of farm forestry in the States and Territories, and for other purposes. February 15, 1937. Passed Senate amended April 20, 1937.

GOVERNMENTAL FUNCTIONS

(S. 2102—BLACK) H. R. 6180— CONNERY—To establish a Civilian Conservation Corps. April 7, 1937. Referred to the Committee on Education and Labor. Public Hearing April 13, 1937.

LANDS

H. R. 5858—DEROUEN—Relating to the revested Oregon and California Railroad and reconveyed Coos Bay Wagon Road grant lands situated in Oregon. March 23, 1937. Referred to the Committee on the Public Lands. Hearings opened to the public April 13, 1937. To be continued in May.

NATIONAL FORESTS

S. 1946—MCADOO (H. R. 5685—VOORHIS)—To facilitate the control of soil erosion and flood damage originating upon lands within the exterior boundaries of the Angeles National Forest, California. March 22, 1937. Referred to the Committee on Agriculture and Forestry.

NATIONAL PARKS

H. R. 2014—WILCOX—To amend the Everglades National Park Act. January 6, 1937. Reported without amendment (Report No. 394) by the Committee on Public Lands March 17, 1937.

H. R. 5472 — WEAVER — To authorize exchange of certain lands within the Great Smoky Mountains National Park for lands within the Cherokee Indian Reservation, North Carolina. March 9, 1937. Referred to the Committee on Public Lands. Public hearing April 8, 1937.

H. R. 5864—BREWSTER—To provide for the establishment of the Katahdin National Park in Maine. March 23, 1937. Referred to the Committee on the Public Lands.

WATER AND STREAM CONTROL

H. J. Res. 150—CLARK (H. J. Res. 91—WHITE)—To permit a compact or agreement between the States of Idaho and Wyoming respecting the disposition and apportionment of the waters of the Snake River. January 25, 1937. Passed House April 5, 1937. Referred to Senate Committee on Irrigation and Reclamation April 7, 1937.

H. R. 2711—VINSON (S. 702—BARKLEY)—To create a Division of Water Pollution Control in the United States Public Health Service. January 12, 1937. Reported with amendment (Report No. 518) by the Committee on Rivers and Harbors April 1, 1937. Passed House April 20, 1937.

S. 1173—COPELAND (H. R. 4545—SNYDER) To amend the Flood Control Act of June 22, 1936. Passed Senate February 24, 1937. Passed House April 19, 1937. Signed by Vice President and Speaker April 20, 1937.

H. R. 4708—LAMNECK—To authorize a preliminary examination and survey of the Scioto and Sandusky Rivers in Ohio with a view to the control of their floods. February 12, 1937. Passed House April 5, 1937. Referred to the Senate Committee on Commerce, April 7, 1937.

H. R. 4948—SMITH—To authorize the maintenance and operation of the Oregon and Washington Bonneville project for navigation and flood control. February 19, 1937. Referred to the Committee on Rivers and Harbors. Public hearings held early in April.

MISCELLANEOUS

H. R. 6150—GREEN—For the completion of the construction of the Atlantic-Gulf Ship Canal across Florida. April 5, 1937. Referred to the Committee on Rivers and Harbors. Public hearings held April 9 and 12.

WILDLIFE

S. 1227—KING (H. R. 4953—ROBINSON, Utah—To provide that land in national game preserves shall be subject to prospecting and location under the United States mining laws. February 19, 1937. Referred to the Committee on Mines and Mining.

ASK THE FORESTER

Forestry Questions Submitted to The American Forestry Association, 919 - 17th St., N. W., Washington, D. C., will be Answered in this Column. . . . A Self-Addressed Stamped Envelope Should Accompany Your Letter.

QUESTION: What fertilizer is recommended for developing peonies?—J. S. H., Md.

ANSWER: This question, being somewhat outside the realm of a forester was referred to F. L. Mulford of the U. S. Department of Agriculture who replied: "From my own experience it seems to me there is nothing better than animal manures for permanent plantations. Where the land is cleared every three or four years, thus making it possible to re-incorporate an abundance of organic matter, it may be possible to use inorganic fertilizers and renew the organic matter in the soil by soil improvement crops turned over between the times that the ground is used for peonies. Organic matter is essential for the permanent maintenance of fertility and suitable texture of the soil. I believe that you cannot do better than manures supplemented by cottonseed meal and bonemeal."

QUESTION: Do you have knowledge of possible forestry work in South America, and if so, how to obtain it?—C. A. S., Pa.

ANSWER: The Latin American nations, according to a recent report of the Pan American Union, are emerging from a period of economic depression, and in order to find employment for their own citizens have generally enacted legislation compelling foreign, as well as native corporations, to employ mostly nationals of the country in question.

William A. Reid, Foreign Trade Adviser for the Pan American Union, to whom this inquiry was referred, advised that the opportunities for American citizens to obtain employment are probably best in this country.

QUESTION: We have some walnut and hickory trees which have grown from seedlings to about six to twelve inches in diameter. Of late years foliage has been attacked by worms which are black and rather large when developed, work very fast, and seem to destroy foliage in short time. They seem to develop from a web-like cluster which I find at the base of the tree sometimes. Can I do anything to prevent this blight?—O. L., Texas.

ANSWER: This appears to be the walnut caterpillar or walnut Datana, described in Farmers' Bulletin No. 1169, "Insects of Shade Trees and Their Control," as black, covered with dirty gray hairs and when full grown, about two inches long. They spend the winter as mature caterpillars at the base of the trees, some one or two inches under the ground and emerge in the spring or early summer to lay their eggs. For control, it is suggested that the caterpillars be collected and destroyed as they feed in clusters on the twigs or when they molt on the trunk and branches. Where possible lead arsenate solution at the rate of one or two pounds dissolved in fifty gallons of water may be sprayed on the entire infected tree.

GHOST TOWNS

(*Continued from page* 242)

close to half a million feet of lumber a day and employed as many as 450 men, counting loggers. With a population of some 1,200 souls, it was a lively place, as the files of the now extinct *Wheeler Reporter* would show. The big Wheeler plant dated only from 1913. In 1932 it went down for good, and the town presents long rows of warped, tumble-down shacks.

Two miles further on was Brighton, whose life-span was two decades. They made 200,000 feet of boards every day at Brighton. But competition, or finance, or something was too much for Brighton. Today a filling station and rows of weather-beaten houses look down upon all that remains of the goodly plant. The remains consist of piling, which the teredoes are eating away in silence.

Continuing south on the Tillamook Line some twenty miles, one finds Garibaldi. Here was one of the largest sawmills in the whole of Oregon.

The Garibaldi mill was a war baby, built just in time to cash in on the high lumber prices of 1917-1921. In its heyday the plant cut 500,000 feet of lumber a day, and back in the nearby hills were two logging towns, White Star and Blue Star, that were showplaces of size and modern equipment. Today it would require a woodsman to find the sites of White Star and Blue Star, for second growth rises quickly in Oregon forests.

As for the sawmill town of Garibaldi, the monstrous coffin of the big mill still stands, but the machinery is being sold and moved as this is written.

The Southern Pacific continues to run a train or so down the Tillamook Line each week, but it is doubtful that much more lumber will come out on box- or flatcars. Currently two large crews of WPA workers are building two new highways from Portland to the sea, and one doesn't have to be a prophet to picture a time when small portable sawmills and truck loggers will be at work along the new highways.

As for the eight billion feet of timber in the Tillamook Burn, most of that will not even be milled in Tillamook County. It is already being logged by three large concerns, employing a total of 800 men, and the logs are being shipped into Portland and elsewhere for making into lumber. In the future, in fact, Tillamook will have to rely on its ocean breezes and its really big cheese industry. It hasn't got enough trees left to brag about.

The newest big sawmill town in the Pacific Northwest is Longview, Washington. Here are big plants of the Long-Bell and of the Weyerhaeuser concerns, far bigger than any of those mentioned in this article. Longview was founded with the idea that it should be permanent. One hopes and there is reason to expect that it will be permanent, in the loose way that all of us except archeologists use that word.

The timber to feed Longview mills is being cut on the selective logging basis, and the companies concerned have been leaders in reforestation practice. The lumber city is a little more than a decade old. It will be interesting, say, forty years from now, to check up and see if Longview, at fifty years of age, will be as lusty as Cosmopolis was not, at the same age. And one wonders if, in the year 2007, Longview will be making boards as did Port Ludlow in its eighty-third year.

NEW BOOKS

A CONTINENT LOST—A CIVILIZATION WON, by J. P. Kinney. Published by the Johns Hopkins Press, Baltimore, Maryland. 368 pages. Illustrated. Price $4.00.

From owners of a continent four hundred years ago, the American Indian today is reduced to a bare 50,000,000 acres that he can call his own. Here is the sweeping theme of Mr. Kinney's story told with the sympathy and understanding of the true historian. It is a book that by shedding light and by charitable treatment of the actors in a great land drama, is destined to advance immeasurably a better understanding of the American Indian and the motivating forces that have shaped his destiny.

As a member of the Indian Service for over thirty years, the author has been able to draw upon a great fund of personal knowledge respecting the treatment of the Indian and his problems. To this he has added the results of painstaking research into public policies dating back to early colonial days. The book thus presents a complete history of Indian land tenure in America and for the first time reveals in chronological detail the processes by which the Indians have been deprived "of whatever legal and moral interest they may have had in nearly two thousand million acres of land and water" within the United States. —O. B.

THIS NEW AMERICA, The Story of the CCC, by A. C. Oliver, Jr., and Harold M. Dudley. Published by Longmans, Green & Company, New York. 188 pages. Price $1.50.

This is a 188-page book of extracts designed to tell the story of the Civilian Conservation Corps. Its collectors and editors are Senior Chaplain A. C. Oliver, Jr., of Walter Reed Hospital, and Harold M. Dudley, Chaplain Reserve, U.S.A. It has the distinction of having a preface and four forewords, with six chapters and a fifteen page appendix. The chapter headings read: The Gethsemane of American Youth, The American Way Out, Testament of Youth, the Voice of Experience, Happy Days (all verse), and What of the Future?

Almost its entire contents consists of copies of letters by CCC enrollees, extracts from letters and articles from a wide variety of sources, including the President, the Secretary of War, Director Fechner, Army chaplains, and educational advisers; an entire chapter of CCC verse (good, bad, and indifferent); extracts from published books, newspaper editorials, CCC camp papers; and an appendix of statistical information on the CCC.

The book has some humanly interesting and inspiring passages, but one has to search for them. Its contents would have been helped by a more systematic arrangement; there is no index of either authors or subjects covered. It might well be called "The CCC Scrap Book."—J. D. G.

FOREST CONSERVATION IN THE WESTERN PINES—This is a twenty-four page booklet giving a picture story of industrial facts and forest products in the western pine region. The purpose of the booklet is to give the public a better understanding of the forest problems of this region and what the private forest land owners are doing to keep lands permanently growing timber. Copies—Western Pine Association, Portland, Ore.

WITH THE ASSOCIATION'S "TRAIL RIDERS OF THE WILDERNESS"

Winter is gone. Life that has been dormant through the long cold months stirs restlessly again. The sap is running free in the trees, birds are on the move, and once bleak clouds, now driven by gentle winds, sail away on golden argosies.

By the sea, mariners look toward the billowing horizon with a yearning in their eyes; city dwellers watch with growing hope the greening of the grass; on the farm the smell of earth brings joy to the ploughman's heart. And north and south, east and west, Trail Riders are looking toward the back country, dreaming dreams that only those who have known the true wilderness can conjure up.

For in their wanderings the Trail Riders truly live a dream—a dream of discovering that which is unknown to them, of freedom in an untrammelled world. Their wilderness is the true wilderness, not a man-made one; and their discoveries and their freedom are their own.

Perhaps there is no better time than now, with thoughts running to boots and saddle, to the fellowship of the wild trail, to explore some of these dreams, to look at the wilderness through the eyes of the Trail Riders themselves.

DREAMS COME TRUE

Mabel Abercrombie, of Knoxville, Tennessee, a member of the 1936 Expedition into Montana's vast Flathead-Sun River Wilderness, was looking for the real thing—and found it. "For twelve days," she wrote, "we heard neither the hum nor horn of motors; no static of radios, no brakes of street cars, no ticks of clocks. Nor did we trek over four-foot graded trails cleared of all vegetation, nor have shelters at night, nor drinking fountains, nor any of the 'developments' one finds in the so-called 'wilderness recreation areas.' We feasted our eyes on and recreated our souls in the true wilderness."

Angela Janszen, of Washington, D. C., who rode into the same wilderness with the pioneer Trail Riders in 1933, has published a delightful booklet on her adventures. Its title is "Dreams Come True," and it is so alive, so full of the wilderness from the viewpoint of "a dude from the East who had never experienced such a life, and knew not what to expect," that it is unfortunate copies are not available for all Trail Riders—as well as those who would become Trail Riders.

After a stirring account of this first expedition of Trail Riders, Miss Janszen concludes with these words: "We were reluctant to leave our beds next morning, for it meant the beginning of the end of the dream. This was to be the last day in the wilderness—and what a day it was. Up we climbed through fields of forget-me-nots into patches of snow, and out onto a meadow of glacier lilies and buttercups. There was a stop for lunch beside a tumbling waterfall, then up again to Gordon Pass, 10,000 feet above sea level, where we tarried to look back with regret at the wilds we had conquered.

"Our regret vanished, however, for the moment at least, when the panorama on the opposite side of the mountain met our gaze. There was a lovely valley dotted with crystal lakes spread out at the foot of the snow-capped Mission Range.

"The descent—our last ride—will never be forgotten. We dropped at the rate of more than 6,000 feet in six miles. What a ride, what a glorious experience! And as we came together for the last time at 'Cap' Laird's beautiful lodge on Lindbergh Lake, what a changed group we were. Those days in the wilderness had bound a party of strangers together as brothers."

Those who have ridden with Joe Murphy as guide over the Continental Divide, along the Chinese Wall, by Big Salmon Lake, then to the summit of Gordon Pass will know something of Miss Janszen's feeling.

GARDEN OF THE GODS

Another Trail Rider to write fascinatingly and with understanding of the wilderness is Jessie Louise Saunders, of San Francisco, a member of the 1936 New Mexico Expedition into the 600,000-acre Gila Wilderness. Last winter she completed a 20,000 word manuscript on her venture with the Trail Riders in the land of the American aborigines—a truly remarkable story of an experience she cherishes as the greatest in her career of travel and study—and Miss Saunders is no novice at either.

Vividly did she record some of the enchanting beauty of the great Canyon of the Middle Fork of the Gila River, which the Trail Riders in 1936 explored for many miles. "We discovered one gorge in the Middle Fork," she wrote, "that was exceptionally beautiful with its sandstone cliffs worn and cut into many strange formations of pinnacles, minarets, squares, columns and images resembling animals and people. Their coloring was exquisite—red, yellow and orange mostly, but often a blending of color impossible to describe. Few people had ever visited this region—a hunter or so, perhaps, or a few stray cattlemen looking for lost stock—and this particular gorge was unnamed. So we named it, calling it the 'Garden of the Gods.' It was discovery, and we thrilled over it."

UNDER THE PINES

Recalling bits of the daily life of the Trail Riders in the Gila, Miss Saunders wrote: "We learned the 'cowboy squat,' where you sit on your heels without actually sitting on the ground. Our meals were usually taken in this fashion. Around the campfires we would sit and talk, or listen, or stretch out flat on the pine needles to be lazy and dreamy. The packers and wranglers would whittle; some of them would sing. Each one did just as the mood moved him or her. There were no speeches. Rather was our interest in things having to do with the forest and the wilderness awakened by being with and talking to the forest officers in their own environment.

"We liked best to sleep right out in the open, under the pines, so that we could look up at the sky for a while. This was the time of the year for shooting stars, and it was fascinating to watch them dart back and forth. Then we would drop off to sleep with the consciousness that the day had been filled to the brim with delights, and in our dreams, we would go off to explore more of this wonderful country."

WIND RIVER RIDERS

A river that had to be crossed,
Another lunch by a lake,
High country, then down Trail Creek,
The last tent camp to make.

Here seemed to be concentrated
The beauties we'd been searching for.
So we again decided to linger
For another day or more.

Then came the end of the trail,
Footsteps were measured and slow—
At last we espied through dense timber
Our last day's pleasant sunglow.

And just to remind us 'twas over,
A cloud crept out of the sky—
To soothe the aching hearts
That were telling the hills good-bye.

The last good-byes by a campfire
Our GP Bar ranch boys had made;
Binding the ties of true friendship
While we watched dying embers fade.

Of course we'll go back to Green River;
'Twas home so long you know.
For oft by our own cheery firesides
Our minds will a-wanderin' go.

Thus wrote Ruth Smith, of Denver, at the conclusion of the 1936 Expedition into Wyoming's mighty Wind River Wilderness. Only a part of her expressive poem is given here; the rest is a stirring day by day chronicle of discovery in the top country of America.

THEY'RE GOING AGAIN

So north and south, east and west, Trail Riders are looking toward the green horizon, dreaming their dreams of the wild country at the back of beyond. Many will ride again this summer, joining those who have yet to experience the full glory of the wilderness.

Margaret Loughran, of Jackson Heights, New York, who in 1935 rode with three expeditions — Flathead - Sun River, Montana; Wind River, Wyoming; and Gila,

New Mexico—and in 1936 with the Wind River and Olympic, Washington, expeditions, is answering the call of "boots and saddle" again this summer. She is scheduled to return to the Wind River country and to ride with the first party of Trail Riders ever to explore the great Sawtooth Wilderness, in Idaho.

A. H. Hutchinson, of Chicago, will also be a member of the Wind River and Sawtooth expeditions this summer. He was with the Flathead-Sun River party in 1933, the Gila expedition in 1935, and with the Olympic riders in 1936.

Mrs. L. F. Gates, of Wilmette, Illinois, who rode with the 1935 expedition into the Gila Wilderness, and with the 1936 party into the Olympics, will ride this year with the Wind River riders, possibly with the Gila party again.

So will Dwight and Helen Taylor, of Washington, D. C., both members of the 1935 Gila expedition. Mrs. Taylor also rode with the Olympic riders in 1936.

Helen Moreau, of Chicago, member of the 1936 Olympic expedition, will be with the Sawtooth riders this summer; Frances M. Benson, of Pittsburgh, who was with the Flathead-Sun River expedition in 1936, will ride with the Wind River party. So will Mary Hornaday, of Washington, D. C., who rode with the Flathead-Sun River expedition in 1935.

Carolyn Bowen, of Marshall, Michigan, a member of the 1936 Flathead-Sun River party, will ride in the Great Smoky Mountains this summer with the Trail Riders. So will Olga Benderoff, of Cleveland, who was with the Wind River expedition in 1935. Another Great Smoky Mountains rider will be Marian Wayave, of Washington, D. C., who rode in 1936 with both the Flathead-Sun River and Wind River parties.

David Beals, of Kansas City, member of the Flathead-Sun River expedition in 1936, will ride with the Wind River party. Mary Downing, also of Kansas City, member of both the Flathead-Sun River and Wind River expeditions last summer, will be with the Olympic riders this year. Wilhelmina Horn, of Rochester, New York, member of the 1935 Wind River party, is also going to the Olympics.

HENRY M. LUCAS

Vice President, representing Trail Riders

These riders, who have already won their spurs, will be joined by other veterans before the expeditions take the field. All of which speaks well for the 1937 Trail Riders.

And speaking of veterans, Trail Riders throughout the country will be happy to know that Henry M. Lucas, of Cleveland, Ohio, a member of the 1933 expedition into the Sun River Wilderness, the 1934 expedition into the Flathead-Sun River region, and the 1936 expedition into the Olympics, has been elected a vice-president of The American Forestry Association—representing the Trail Riders of the Wilderness.

EXPEDITIONS FOR 1937

Expedition No. 1—Great Smoky Mountains, N. C.
Twelve Days—June 16 to 27
Maximum Cost, $125—from Asheville

Expedition No. 2—Flathead-Sun River, Mont.
Twelve Days—July 4 to 15
Maximum Cost, $120—from Missoula

Expedition No. 3—Wind River Mountains, Wyo.
Fourteen Days—July 18 to 31
Maximum Cost, $170—from Kemmerer

Expedition No. 4—Gila Wilderness, N. M.
Fourteen Days—August 3 to 16
Maximum Cost, $125—from Albuquerque

Expedition No. 5—Sawtooth Mountains, Idaho
Fourteen Days—August 2 to 15
Maximum Cost, $130—from Shoshone

Expedition No. 6—Olympic Mountains, Wash.
Fourteen Days—August 19 to September 1
Maximum Cost, $160—from Seattle

Expedition No. 7—Great Smoky Mountains, N. C.
Twelve Days—September 14 to 25
Maximum Cost, $125—from Asheville

READY FOR "BOOTS AND SADDLE!"

Packing arrangements for 1937 are complete. Tom Alexander, of Asheville, North Carolina, will again be on hand to guide the Great Smoky Mountains riders. In Montana, it will be Joe Murphy—for the fifth year. Joe, as the pioneer riders will recall, guided the first Trail Rider party ever to take the field. Few men know the Flathead-Sun River country better than this genial rancher. "Cap" Eli Laird will again receive the riders at his famous ranch on Lindbergh Lake.

Stan Decker, who, by the way, recently came East and visited Trail Rider headquarters in Washington, will guide the riders for the third consecutive year through the rugged Wind River Mountains. His GP Bar Ranch, on upper Green River Lake, from which the riders will begin their long pack trip, is truly a picture spot. Two days have been added to the Wind River trip to give the riders a real opportunity to explore the high country.

In New Mexico, the riders will detrain this year at Albuquerque instead of Deming. This change, which will save two days of railroading, is made possible by road development west of Albuquerque. Busses this year will be able to go direct from Albuquerque to the Beaverhead Ranger Station under Black Mountain, where the trail trip will begin and end. Thus it is possible to spend one more day in the Gila Wilderness—fourteen days instead of thirteen, as in 1936.

G. W. "Dub" Evans, of Beaverhead's Slash Ranch, is rounding up his string of horses for the Gila riders again this summer. Jim and Alex, his Mexican cooks, will be with him.

In Idaho, the riders will meet D. M. Williams, of Obsidian, who has been engaged to guide them on the pioneer trip through the Sawtooth Mountains. Mr. Williams has been around the Sawtooth region for a great many years, has good riding and pack horses on hand, and should prove a great addition to the growing list of Trail Rider friends and guides.

The Olympic riders will find R. E. Voorhies and Ignar Olson on hand again this year to guide them—but over a new route. Several major changes have been made in the Olympic itinerary, chiefly to view new country and to eliminate some hazardous trails. It's a wild country up there and good trails are important. They will be in better shape this year.

Forest Service and Park Service officers have not been assigned to the expeditions as yet. These assignments will be announced later. Nor is it possible at this time to announce official party leaders designated by The American Forestry Association. Medical officers will also be announced later.

As in previous years, the Association will assist riders in arranging railroad transportation to and from designated railheads. Special agents will be asked to contact riders and to work out the most desirable itineraries. The Southern Railroad serves Asheville, North Carolina; the Northern Pacific and Milwaukee Road, Missoula, Montana; the Union Pacific, Kemmerer, Wyoming, and Shoshone, Idaho; the Santa Fe serves Albuquerque, New Mexico; and the Northern Pacific, the Union Pacific, Great Northern and Milwaukee Road serve Seattle, Washington.

Sleeping bags and mattresses and other equipment may again be purchased by the riders through The American Forestry Association. Discounts up to ten per cent are available on most all equipment.

Costs of expeditions this year are announced on a "maximum" basis to allow more time for the perfection of organization details.

MARGARET LOUGHRAN

Sixth and seventh expeditions ahead

FOREST INDUSTRY WILL DO ITS PART

(*Continued from page* 233)

reviewed the economic background of the lumber industry, sketched its present problems and concluded with a plea for an American forest policy that gives fair recognition to public as well as private responsibility.

"Forest industry is in transition from the old order to the new," he declared. "It is gradually changing its methods and its thinking from the old viewpoint of timber as a mine to the newer viewpoint of timber as a crop. Forest industry seeks to adjust its upbringing in laissez faire economics to the public interest now recognized as inherent in natural resources. It honestly wants to find common ground on which the obligations of responsible men to the investments in their trust can meet legitimate interest of public welfare. . . .

"The increasing support of forestry throughout the industry found a definite point of focus in the National Conservation Conference of 1933 which, for the first time in our history, drafted a forest code for industry. Lumbermen assumed an obligation to protect their lands from fire, during and after logging; and, through seed trees, uncut small timber selective logging or whatever method was best adapted to the forest and site, to leave cut-over areas in good condition for regrowth. Rules of forest practice were adopted in each regional division of the industry. Trained foresters were employed by the Code administrators to enforce these rules by inspection of logging operations. The woods knowledge of the whole industry was focused upon ways and means to make good under the obligation assumed by the Code. . . .

"The definite trend in forest industry today, as an obligation of good citizenship, is to leave its cut-over lands in good condition for regrowth. Beyond that, the industry knows that the management of forest lands for planned future production, or sustained yield, is coming; that the old regime of 'cut-out and liquidate' will give place to permanency in forest ownership, in forest-borne communities, in forest supported labor. A number of owners have already put their forest properties in continuous production and are doing their best to carry out the whole program. The industry generally wants to progress in the same direction.

"The barriers to sustained yield of timber—for many owners and for some forest regions—are real. Many of them are wholly beyond the power of industry to remove. Because we hold that forestry as a national undertaking must be a joint enterprise of industry and the public, we believe an obligation rests upon the public to do its part in removing these barriers.

"They may be stated in the simple truth that sustained yield from forest land requires a sustained market for forest products and a sustained return to the forest owner that enables him to stay in business. Security for communities and labor, based upon permanent forest enterprises, must rest upon economic security for the enterprises themselves.

"In a nutshell, our problem is this. On one hand, our area of forest land and our volume of forest growth are increasing. On the other hand, our consumption of forest products at home has drastically decreased and our market for forest products abroad has been cut down by more than one-half.

"Twenty years ago, the question before the house was: 'How can the United States be adequately supplied with timber?' Today, the question has become: 'How can our expanding acres of forest land be profitably employed?' . . .

"Sustained timber culture cannot be brought about on one-fourth of the soil of the United States, unless forestry in land use is backed up by forestry in marketing and economics. We cannot grow what we cannot sell. We need an American policy that is forest-minded all the way through. We need the same national attitude toward forests as toward other soil crops.

"This lesson was learned by the leading forest countries of Europe generations ago. In France, Germany and Sweden, the security of domestic forest industries and domestic timber values is just as deeply intrenched in public policy as the system of land usage and control. Economic security is the basis of their conservation."

Pointing out present hazards to the economic security of the lumber industry which public policy has failed adequately to meet, Colonel Greeley asked: "What may reasonably be asked of an American

policy that is forest minded all the way through?" His answer included the leaving to private initiative all the land on which industry is capable of stable ownership and good forest practice; a material expansion in federal and state forests to give stability to forest land ownership, the application of sustained yield management plans to public and private forest land; creation of a federal system of forest credits; recognition of public responsibility for better protection of forest lands against fire and other destructive agencies beyond the power of an individual land owner to stop; adjustment of the present system of taxing standing timber; extension of federal research to promote markets and uses for forest grown products; reasonable tariff protection for species of lumber which the United States produces in surplus and removal of trade barriers against American timber products abroad.

"These proposals are offered for a national forest policy that goes all the way through", concluded Colonel Greeley. "We realize that they constitute a large order. Their accomplishment will necessarily take time. Our purpose is not to put forward a list of alibis; to excuse forest industry for failing forthwith to measure up to the full expectations and desires of public interest. It is rather to face the realities; to state plainly concrete things that must be done in what we conceive to be a joint undertaking of the public and the industry. The fact that the task is large and complex, and progress will be slow, makes it all the more needful that our groundwork be carefully planned.

"Forest industry welcomes the opportunity to do its part."

On the morning of April 9, the Conference reconvened in general session, considered the reports of the various committees, and adopted a revised program of action based upon the following preamble:

"Permanent lumber and other forest-using industries are essential to national welfare. We recognize the vital relation of forest conservation and renewal to the permanency of such industries and their employment. We believe that in forest ownership, operation and renewal, there should continue to be the fullest possible reliance, by the public, upon private enterprise and initiative. We believe that forest industries should accept the responsibility and obligation to cut and protect their forest lands so as to provide for regrowth, and to reserve immature timber, so far as practicable, as a first step toward sustained yield management. We accept the continuous production, or sustained yield, of forest resources as the ultimate objective of our industries. To hasten the attainment of this objective, we urge effective cooperation by state and federal agencies, including the enactment of needed legislation recommended by the Forest Conservation Conference."

A digest of the more important action recommended is given below:

Industry Action. To leave cut-over forest lands in a favorable condition for restocking; to continue its efforts in fire prevention and suppression; to make continuous forest production the objective of forest management; to apply principles of selective logging where conditions are favorable; to encourage forest owners to comply with recognized rules of forest practice; to continue and expand research in manufacture and utilization; to continue to maintain regional conservation committees to carry out the program formulated by the Conference; to aid in securing needed state and federal legislation as proposed by the Conference.

State Action. Passage of legislation authorizing agreements under the Fulmer Act; acquisition of forest lands in furtherance of sustained yield units; provide that tax delinquent forest lands be managed where practicable as State Forests; provide proportionate share of funds for protection of forest lands from fire, insects, disease.

Federal Action. Extension of the National Forests by purchase, land exchanges and otherwise as necessary to bring about stable forest ownership and to promote sustained yield management; establish a broad policy of cooperative sustained yield units embracing where necessary federal, state, county and private forest lands; appropriate $5,000,000 annually for ten years under the Fulmer Act to aid states in establishing State Forests; continue present policy withholding federal timber from sale except as needed to maintain existing operations; establish a system of forest credits to promote permanent forest management; appropriate $9,000,000 annually for the protection of forests from fire; place the control of forest insects and diseases on a basis comparable with federal agricultural pest control; make available Clarke-McNary funds equal to fifty per cent of the cost of fire protection; complete the forest survey at an early date; provide more adequately for forest research and direct research upon problems in order of their importance; increase the export outlets for forest products; apply rules of forest practice to farm woodlands and forests owned in small units; provide adequate training in forestry for county agents and other agricultural workers.

Forest Taxation. Cooperation by all agencies in formulating general tax policies designed to promote community stability and to encourage continuous forest production; study by appropriate agencies of the present estate and inheritance tax laws in respect to their effect upon sustained yield management; study of the federal undistributed profits tax as it relates to funds expended for reforestation and sustained yield forest management.

Final action of the Conference was passage of a resolution requesting the president of the National Lumber Manufacturers Association to appoint a committee to follow up the work of the Conference and to promote its recommendations. This committee is to embrace representatives of the lumber organizations, the Departments of the Interior, Agriculture and Commerce, the Chamber of Commerce of the United States, The American Forestry Association, the American Farm Bureau Federation and the National Grange.

THE MAPLE

Red maple tassels, and the scent of spring.—
Then from her green-leafed crown
A bunch of "keys" thrown down.
Keys to the Summer's joyful opening.

—*Bertha Gerneaux Woods*

ANNUAL MEETING

(*Continued from page* 237)

seven o'clock. Eminent speakers from every field of water conservation will address these meetings.

Tuesday, June 1, will be given over to the river trip. During the course of the trip there will be a graphic description of the great 1937 flood in the region viewed and an explanation by a representative of the Army Engineers of the problems of preparing for and dealing with floods. In the afternoon, there will be a boat panel-discussion of the influence and place of forest and other vegetal cover in water control and soil conservation. Authorities on various phases of this subject will participate.

Wednesday, June 2, the group will leave Cincinnati by motor en route for Zanesville by way of Hocking State Park and Forest—Ohio's most scenic spot. Here a stop will be made for an outdoor luncheon and for visits to some of the interesting caves, gorges and other geological features for which the region is famous. In the afternoon, the trip will be completed to Zanesville where hotel accommodations will be available.

Thursday, June 3, will be devoted to a motor tour of the Muskingum Conservancy District, a political subdivision of Ohio created in 1933 under the provisions of the Ohio Conservancy Act. The district embraces eighteen counties. Here will be seen in course of development a diversified but coordinated program of land management designed to bring under control the waters of the Muskingum Valley. The project, estimated to cost over $43,000,000, marks the first cooperative effort of the Federal Government, a State and a political subdivision to make a large watershed flood-proof.

During the course of the trip, members of the Conservancy staff will explain the project and the part which the various works visited play in the whole plan. At New Philadelphia, headquarters of the Conservancy, the group will be guests at a midday luncheon and upon the return to Zanesville in the evening a complimentary dinner will be given by the Conservancy and the Zanesville Chamber of Commerce.

The meeting will provide the members of the two associations and the public, which is cordially invited to participate, an unusual opportunity to obtain a comprehensive understanding of the problems of water conservation and flood control. Those planning to attend should make their hotel reservations as early as possible by writing The American Forestry Association, 919 Seventeenth Street, Washington, D. C. Room rates at the Netherland Plaza are $3 for single rooms with bath and $5.50 for double rooms.

ELMS AT BAY

(*Continued from page* 214)

steady reduction of infected trees in certain key areas in the three states is encouraging. For example, where there were 670 diseased trees on Staten Island, New York, in 1934, only sixty-nine such trees were found and destroyed in 1936. Mean-

while, the rank and file of ornamental elms continue in good health. These accomplishments clearly indicate the disease can be eradicated if the authorities are given money and means to carry on an uninterrupted attack.

Federal authorities are chary about estimating or prophesying the ultimate cost of eradication, but costs covering the past four or five years and the knowledge of the present infected area are known to all. With these in mind, one may reasonably estimate that additional appropriations totaling $15,000,000 to be made available through the next five years will place the disease well under control. Thereafter, relatively small appropriations will be necessary for another five or ten years to mop up recurring infections.

This indicates a probable cost of from $25,000,000 to $30,000,000 to make America safe for the elms. Surely the expenditure of $30,000,000 is not too great to save three-quarters of a billion dollars in tree values.

At best these values are only nominal, for who can estimate the value of a fine shade tree? Who can appraise in dollars and cents the value of a tree in whose fibres history and sentiment are woven?

One of these stands near the southeast corner of the House wing of the Capitol in Washington. It is a magnificent American elm whose arching branches have sheltered a cross-section of the nation's people for a hundred years or more. Once when the Capitol grounds were being remodelled it stood in the way of a proposed sidewalk and would have been felled but for the intervention of Senator Don Cameron, of Pennsylvania. The wheels of Congress were stopped to save that tree, but last year when an effort was made to amend the Agricultural Appropriation bill to increase the sum for eradicating Dutch elm disease, Congress barely slowed down — and then only to make way for the steam roller that flattened the amount back to that recommended by the Bureau of the Budget.

The Cameron tree was saved when America had more trees than now, but the love of trees and willingness to sacrifice for them continues dominant in the minds and hearts of Americans. The elms of America are at bay. They must be saved!

Congress must again take action. This time not by stopping something, but by doing something. Appropriations are needed. The public should not be content until Congress makes the money available to complete the job of eradicating Dutch elm disease from the United States.

WATER IN TREES?

(*Continued from page* 231)

and one-half feet per hour. Münch found one and one-half to three feet per hour in trees.

Recent ideas on the cause of water ascent are based on the cohesive strength of water and the pull exerted within the leaf cells due to evaporation and osmosis. These assume unbroken columns of water extending through the lumen of connecting cells all the way from the mesophyll cells in the leaves down to the roots; or continuous films of water under tension supported by the hygroscopic cell walls and coexistent throughout all living parts.

The water tension theory was proposed by H. H. Dixon and J. Joly in 1894 and independently by Askenasy in 1895, and is sometimes called Dixon's Theory, although Nägeli as early as 1866 suspected that it played a part. It differs from the previous imbibition theory proposed by Unger

in 1868 and championed by Sachs in 1878, in that unbroken columns of free water under cohesive tension filling the lumen of the cells are the means of the movement, instead of diffusion of the bound or hygroscopic moisture within the cell walls. Such columns of water can sustain a pull of several hundred atmospheres without breaking.

Yet one might expect, if water were raised by such strong tensions in the leaves, that greater growth would occur in those parts nearest the ground. Then why it is that we generally find the tops of trees growing more rapidly than the lower branches? Perhaps, however, this observation is too general for we know that after a certain height is reached top growth does slow down. It may well be that this saugkraft is what limits the heights of trees.

Any adequate theory of sap flow must account not only for the elevation of water from the roots to the leaves, but also a conduction and distribution of the sugars manufactured by the chloroplasts in the leaves to all living and growing cells of the plant. The generally accepted idea, which is probably correct, is that this distribution of food material occurs through the inner bark (phloem) and the sieve-tubes, but how it takes place is in dispute.

Many have assumed "protoplasmic streaming" in living cells as the mechanism of transport, and passage from cell to cell through the walls by the infinitesimal "plasmodesma," the protoplasmic threads which penetrate the cell walls and join the cytoplasm of adjacent cells. Others have postulated a movement through the sapwood (xylem) itself.

It is difficult to see, however, how an upward movement of water and a downward distribution of sugar solution could both take place through the same tissue. Nevertheless in the sugar maple there is no question but that the sapwood contains great quantities of sugar in solution in the early spring under considerable pressure at the same time that the buds are beginning to swell. Practically nothing is known as to the cause of sap pressure in sugar maples, and in other trees. That it is not due to root pressure has been fully proven, neither is it due to expansion of gases.

Without going further into the many hypotheses as to the cause and channels of sap flow in trees, I want to explain a mechanism, based on purely known physical principles, which apparently ought to work—as far as it goes. It probably is far from a complete explanation of sap movement, and may not be what takes place at all; but the interesting thing about it is that the mechanism is a workable idea and accords with the principles of thermodynamics. The mechanism was proposed by Ernst Münch in "Die Saftbewegungen in der Pflanze" in 1930.

In explaining this possible way to account for sap movement in trees I will diverge somewhat from Münch's original theory and diagram so as to include certain features which it seems to me better accord with the facts, and in order to make the subject easier to understand. Briefly the process is as follows: Water under certain conditions as films adhering to hygroscopic surfaces and in unbroken capillary tubes can sustain a cohesive tension of hundreds of atmospheres. Such a pull is exerted upon the films and filled lumen existing in the sapwood of a tree by the osmotic suction of the sugar solutions in the cells of the leaves, in which the sugar is being synthesized by the chloroplasts, augmented by evaporation into the intercellular spaces and outward through the stomata.

This tension is called "saugkraft" by the German writers. The osmotic pull is produced by sugar solution in a cell with a completely enclosing "semi-permeable" membrane, that is, one which permits passage of water but prevents passage of the much larger sugar molecules. The molecules of sugar dissolved in the water exert a pressure on the membrane—or more correctly on the surface of the water which limits the solution—just as though they were molecules of a free gas, and they follow the same laws as though the sugar were a gas.

Now if the walls of the confining cell were absolutely rigid they would hold against this pressure. But they are not rigid and they expand like a rubber balloon being inflated. Thus a suction or pull is exerted upon the surrounding water, which is sucked into the cell by the expanding walls. The actual pull or "saugkraft" exerted on this water is not equal to the osmotic pressure of the sugar but to the difference between the osmotic pressure and the tension in the walls.

This saugkraft has been accurately measured by many biologists, and found to be more than ample to pull the water from the roots to the tops of the highest trees. The actual amount of tension existing will of course not exceed the total resistance to the pull, namely, the weight of the water plus frictional resistances to movement; but the saugkraft of the leaf cells is more than sufficient.

So far we have dealt with Dixon's theory. Now as to its extension by Münch. Let us refer to the mechanistic diagram of a tree. Suppose a cell completely enclosed with unbroken walls to exist in the green leaf. By photosynthesis it produces sugar from the energy supplied by the sunlight, which concentrates the solution in its interior. If this cell is in contact with water through a semi-permeable membrane it will exert a saugkraft upon this water equal to the difference between the osmotic pressure of the sugar solution and the tension in the wall. Inside the cell will be liquid pressure; outside tension.

Let us assume this water contained in another cell to the right communicating through the vertical osmotic membrane, and that this cell contains no sugar or chloroplasts. Also suppose that evaporation occurs from this right cell through its wall and thence out of the stomata. This depletes the volume of its water, so equilibrium can then be established only by an upward flow from below to supply the amount evaporated. The osmotic suction and the evaporation might both occur from the same cell but it is convenient to consider the two independently.

Let this right (water) cell be in touch with a series of cells below, all filled with water and separated by semi-permeable membranes. Let the left cell (sugar) also be in touch with a series of cells below. The water column on the right of the diagram will be drawn upward by the saugkraft. The sugar cell on the left will begin to expand like a balloon by the osmotic pressure of the sugar drawing water from the right cell.

But suppose that the wall separating this sugar cell from the one below is not intact but is perforated by very minute holes large enough to allow the sugar

molecules to pass through. The pressure in this cell will then force some of the solution out and downward through these perforations at the same time that it is drawing in water through the membrane on the right. None of the sugar solutions can be forced by this pressure into the water cell on the right on account of the semi-permeable membrane; it permits of only one-way traffic, the pure water may enter but none of the sugar escape.

As the solution in the sugar cell becomes diluted by the entrance of water and the exudation of solution, movement would finally cease and the system come into equilibrium, were it not for the continual renewal of the sugar by the chloroplasts. We thus have set up as it were a pressure generator in this cell and a condenser in the left-hand cell; a circulation is thus established. By the time the sugar reaches the root it has become greatly diluted so that it cannot set up a counter action sufficient to oppose the pull of the saugkraft.

The theory has been severely criticized by a number of researchers but it has not been completely refuted. On the whole it seems quite reasonable, and so far as I am aware is the only theoretical mechanism which has been proposed which would seem to be workable on purely known physical laws.

An experiment very easy to make by anyone, is to attach a pressure-vacuum gauge to the sapwood of a tree. Bore a small hole, say three-sixteenths of an inch, through the bark and a half to an inch deep in the sapwood of a tree and screw in a piece of ordinary one-eighth inch pipe. Attach the gauge to this in such a way that it can be completely filled with water. Be sure that all joints are tight and that the pipe is completely full,—no air bubbles. In preparing the pipe it is well to bore several holes in the end inserted in the sapwood, so that it will not become sealed against the pressures. Then await results.

A sugar maple is a good tree to try this on. In the late winter astonishing pressures occur. I have measured twenty-five pounds gauge pressures in a sugar maple! Then again a partial vacuum may occur at times. The accompanying photograph is that of a gauge attached to shagbark hickory and it registered a pressure of twenty pounds on September 13, zero on September 17 and twenty-one pounds October 21 when the photograph was taken. It has been on for about two years and the sapwood has varied between a vacuum of twelve inches of mercury and pressure of twenty-one pounds during this time.

These changes are not caused directly by weather conditions; the vacuum may increase as the temperature rises and vice versa, and on wet days it may be greater than on dry days. In the case of the sugar maple, a high pressure was indicated in February before the ground had thawed out, and while the area about the roots was still covered with snow. So it could not possibly have been due to osmotic pressure in the roots. Different species of tree behave very differently in this respect. What the significance of these changes in pressure is not known, but they are evidently something aside from the sap flow and do not indicate in any sense the saugkraft, which cannot be directly measured.

Although there are volumes of literature on this subject, how little we really know about this major accomplishment of nature!

Index to ADVERTISERS

May, 1937

	PAGE
American Fork and Hoe Company	263
American Pad & Textile Company	259
American Telephone and Telegraph Company	2nd Cover
Atchison, Topeka & Santa Fe Railway Company	253
Atlas Powder Company	257
Bartlett Manufacturing Company	251
Beebe Brothers	266
Bismarck Hotel	267
California Fire Extinguisher Company	267
Canadian Pacific Railway Company	252
Caterpillar Tractor Company	243
Chalfonte-Haddon Hall	255
Chamberlin Hotel	256
Chicago, Milwaukee, St. Paul & Pacific Railroad Co.	255
Chicago, Rock Island & Pacific Railway Co.	254
Cleveland Tractor Company, The	4th Cover
Crescent Manufacturing Company	266
DuPont de Nemours & Company, Inc., E. I.	245
Eagles Mere Hotels Company	246
Evinrude Motors	264
Fechheimer Brothers Company	246
Great Northern Railway	249
Herbst Brothers	257
Hudson Sporting Goods Company	267
Idaho School of Forestry	264
Jaeger Machine Company, The	265
Keene Forestry Associates	267
Kelsey Nursery Service	262-267
Loring, J. Alden	266
Maine School of Forestry	267
Mears, A. H. G.	252
Missoula Chamber of Commerce	255
National Target & Supply Company	267
Netherland Plaza Hotel	247
New York State School of Forestry	264
Northern Pacific Railway	251
Old Town Canoe Company	262
Pacific Marine Supply Company	3rd Cover
Peat Import Corporation	248
Plumb, Inc., Fayette R.	266
Porter, Inc., H. K.	265
Remington Arms Company, Inc.	265
Rich, C. H.	248
Schoepfer's Studio	264
Smith & Company, D. B.	207-252-264
Stoeger, Inc., A. F.	267
Union Pacific Railroad	258
Warren Axe and Tool Company	254
Webley & Scott, Ltd.	246
Wilson Company, Al	246
Woodworking Specialty Company	267
Yosemite Park and Curry Company	259

WHO'S WHO

Among the Authors in this Issue

G. H. COLLINGWOOD (*A Billion Elms at Bay*), a native of Michigan, is a graduate of Michigan State College and the University of Michigan and has been Forester of The American Forestry Association for the past nine years. He writes on the all-absorbing subject of the Dutch elm disease and the far-flung elm battle line, for Europe and America are both involved in this warfare to save one of the most beautiful and significant of all plant forms. The elms of England have written their place in her history and the elms of America are a part of the story of her founding. When the first settlers came they were growing here in beauty and majesty. Remove the elm from the landscape of early America and one of its essential features would be lost. These trees can and *must* be saved, says Harris Collingwood, and he tells what should be done to help "a billion elms at bay" win their battle with a foreign foe.

G. H. Collingwood

GEORGE M. HUNT (*The Life of Your House Is Up to You*) is a wood preservation man from the ground up. Graduating from the University of California in 1911, he entered the Forest Service as a chemist in forest products. He is in charge of Wood Preservation at the Forest Products Laboratory, Madison, Wisconsin, and specializes in its protection from all forms of attack, and in its decay resistance.

STEWART HOLBROOK (*Ghost Towns Still Walk*) lives in Portland, Oregon. None can draw better than he the colorful life of the old time lumber town, for he loved the open and early knew familiarly logging camps and the great river drives of old—now rapidly becoming legend. And so he naturally turned to writing the saga of these "ghost towns" which flourished long before his time but embody so important a cross-section of early development in America, for the young and virile lumber industry gave them birth. The story of their hey-day, of the great mills that fed them, and of their decline into the ghost towns of today is a tale well worth the reading.

H. D. TIEMANN (*How Does Water Reach the Tops of Trees?*) is widely known as a wood technologist. Graduated from Stevens Institute in 1897, he took his master's degree in forestry at Yale in 1903 and had charge of the Yale Timber Testing Laboratory from that year until it was moved to Madison. His specialization on kiln drying for over twenty years won him an international reputation in this field. He is now carrying on research in wood technology at the Forest Products Laboratory at Madison, Wisconsin. The experiments he here describes so interestingly, the conclusions drawn and theories presented are the author's own and are not based on Laboratory data.

HENRY CLEPPER (*The Flowering Tree*), until recently a member of the staff of the Pennsylvania Forest Research Institute at Mont Alto, is now an editor in the Section of Information of the United States Forest Service at Washington. Mr. Clepper's work as a writer on forestry and outdoor subjects is widely known.

FRANK A. WAUGH (*Pollards Are Picturesque*), born in Wisconsin and reared in Kansas, is a former newspaper man. Photography, flute-playing and writing are his avocations. He has traveled widely in Europe and the Orient and has been since 1902 on the teaching staff at Amherst.

M. B. JENKINS (*Trees That Conquered the Prairie*) is Director of Forest Research with the Conservation and Survey Division of the University of Nebraska, at Lincoln. He grew up on a homestead and timber claim in Furnas County, Nebraska, — the south-central part of the State. There on his father's homestead his boyhood days were spent in charge of the orchards and tree plantings. This interest has been fostered and developed through an active life, and more recently he has directed a corps of scientists and completed a list of trees and woody plants capable of standing the severe climate and varying soils of Nebraska and the Great Plains region.

M. B. Jenkins

ALFRED M. BAILEY and ROBERT J. NIEDRACH (*Trailing Birds of Prey*) are noted for their scientific work in biology and for their photography of wildlife. Mr. Bailey's illustrated lectures sweep the region North of the Arctic Circle to the trails of Abyssinia, and his motion pictures cover the filming of birds of the southern marshes and birds of the sea and coral sands as well as our better known native species. Director of the Chicago Academy of Sciences from 1927 to 1936, Mr. Bailey is now Director of the Colorado Museum of Natural History at Denver. His co-author, Mr. Niedrach, hails from Hudson County, New Jersey, where he used to wander over the Hackensack marshes. He also is a skilled photographer and is considered the authority on Colorado birds. He is now Curator of Birds at the Colorado Museum, at Denver. In this story, we follow through with them to the high nesting place of Mr. and Mrs. Rough-leg Hawk, who take none too kindly to the efforts of even such expert photographers, inquisitive regarding their domestic affairs!

ETHEL ROMIG FULLER, poet, of Portland, Oregon, gives an unforgettable picture of spring's tapestry — orchard-tinted, — in her verse, *May Dusk*. Bertha Gerneaux Woods (poem, *The Maple*), writes from Maryland.

THE COVER—"A Little Elm Grows Up" is a photograph made by Ernest Crandall,—noted far and wide for his tree and flower studies,—on the Unadilla River in New York.

"Some"

● Inset—Sylamore Road—up to 1913 the best and most expensive county road in Ozark National Forest, Arkansas.

● Highway No. 270—one of many—Ouachita National Forest, Arkansas. Photos by U. S. Forest Service

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